Vol. 1069 Number 2

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

oute to:

PATENTS

August 12, 1986

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DEPARTMENT
OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 12, 1986 Volume 1069 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 31, 1986.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 9, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,397,043 through 4,398,304
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 25, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,330,902	06/218,471	5/25/82
4,330,903	06/216,518	5/25/82
4,330,952	06/249,999	5/25/82
4,330,955	06/217,951	5/25/82
4,331,103	06/234,947	5/25/82
4,331,138	06/266,659	5/25/82
4,331,139	06/273,732	5/25/82
4,331,171	06/228,100	5/25/82
4,331,256	06/248,273	5/25/82
4,331,272	06/229,739	5/25/82
4,331,311	06/271,534	5/25/82
4,331,332	06/223,321	5/25/82
4,331,448	06/237,101	5/25/82
4,331,472	06/266,048	5/25/82
4,331,473	06/266,066	5/25/82
4,331,554	06/271,901	5/25/82
4,331,571	06/287,934	5/25/82
4,331,589	06/254,726	5/25/82
4,331,637	06/255,355	5/25/82
4,331,667	06/231,001	5/25/82
4,331,718	06/262,996	5/25/82
4,331,742	06/220,214	5/25/82
4,331,755	06/221,451	5/25/82
4,331,781	06/223,811	5/25/82
4,331,911	06/234,884	5/25/82
4,332,025	06/218,304	5/25/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,044,805, Re. S.N. 868,324, Filed May 29, 1986, Cl. 141/134D, ROUTER GUIDE UNIT, Donald D. Gronholz, Owner of Record: *Inventor,* Attorney or Agent: Richard O. Bartz, Ex. Gp.: 243

4,411,963, Re. S.N. 854,657, Filed Apr. 16, 1986, Cl. 427, THIN FILM RECORDING AND METHOD OF MAKING, Harry E. Aine, Owner of Record: *Inventor,* Attorney or Agent: Harry E. Aine, Ex. Gp.: 152

4,414,890, Re. S.N. 830,215, Filed Feb. 18, 1986, Cl. 100/162B, PRESS ROLL WITH ADJUSTABLE FLEXION, Christian Schiel, et al., Owner of Record: *J. M. Voith GmbH, West Heidenheim, Germany,* Attorney or Agent: Bernard Gerb, et al., Ex. Gp.: 242

4,437,742, Re. S.N. 841,796, Filed Mar. 20, 1986, Cl. 354/21, CAMERA CAPABLE OF AUTOMATICALLY RESPONDING TO DATA CODED ON FILM, Nobuyuki Taniguchi, Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Walter D. Ames, et al., Ex. Gp.: 211

4,444,321, Re. S.N. 837,086, Filed Mar. 6, 1986, Cl. 211/186, BRACKET STRUCTURE FOR SUPPORTING A SHELF OR PARTITION OF A DISPLAY CASE OR THE LIKE, William Carlstrom, Owner of Record: *Lyle-Carlstrom Associates, Inc., Sommerville, N.J.,* Attorney or Agent: Edward H. Loveman, Ex. Gp.: 355

4,445,157, Re. S.N. 855,316, Filed Apr. 24, 1986, Cl. 360/133, FLEXIBLE MAGNETIC DISK CASSETTE, Kiyoshi Takahashi, Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Lewis H. Eslinger, et al., Ex. Gp.: 233

4,447,445, Re. S.N. 861,249, Filed May 8, 1986, Cl. 514/460, MANOALIDE AN ANTI-INFLAMMATORY ANALGESIC MARINE NATURAL PRODUCT, Robert S. Jacobs, et al., Owner of Record: *Regents of the University of California, Berkeley, Calif.,* Attorney or Agent: Thomas E. Ciotti, et al., Ex. Gp.: 125

4,450,512, Re. S.N. 866,053, Filed May 21, 1986, Cl. 362/276, ARRANGEMENT FOR MOUNTING A THERMAL PROTECTIVE DEVICE IN A RECESS MOUNTED LIGHTING FIXTURE, Paul J. Kristofek, Owner of Record: *Cooper Industries, Inc., Houston, Tex.,* Attorney or Agent: Gomer W. Walters, et al, Ex. Gp.: 342

4,450,828, Re. S.N. 849,080, Filed Apr. 2, 1986, Cl. 126/343.50A, TRUCK HAVING EQUIPMENT FOR ON-SITE HEATING AND COLLECTING USED GREASE FROM CONTAINERS, Donald R. Onken, et al., Owner of Record: *Inventors,* Attorney or Agent: Edwin E. Greigg, et al., Ex. Gp.: 344

4,451,137, Re. S.N. 870,276, Filed May 27, 1986, Cl. 355/14C, ADJUSTING COPIER COPY CONTRAST AND DENSITY DURING PRODUCTION RUNS, Ronald W. Farley, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: Norman Rushefsky, Ex. Gp.: 215

4,476,953, Re. S.N. 850,151, Filed Apr. 10, 1986, Cl. 180/249, FOUR-WHEEL VEHICLE DRIVE SYSTEM, Kazuyoshi Hiraiwa, Owner of Record: *Nissan Motor Co., Ltd., Yokohama, Japan,* Attorney or Agent: Richard L. Aitken, et al., Ex. Gp.: 316

4,488,817, Re. S.N. 853,196, Filed Apr. 17, 1986, Cl. 366/149, DEVICE FOR MAKING FROZEN CONFECTIONS, Susumu Uesaka, et al., Owner of Record: *Nippon Light Metal Co., Ltd., Tokyo, Japan,* Attorney or Agent: Eric P. Schellin, Ex. Gp.: 242

4,515,223, Re. S.N. 837,174, Filed Mar. 7, 1986, Cl. 172/372, HAND OPERATED WEEDING DEVICE WITH OPERATING DEPTH STABILIZER PLATE AND WEED DISPLACER STRIP, Wade A. Erickson, Owner of Record: *Inventor,* Attorney or Agent: Harvey B. Jacobson, Ex. Gp.: 331

4,530,989, Re. S.N. 868,990, Filed May 30, 1986, Cl. 528/15, ROOM TEMPERATURE STABLE ORGANOPOLYSILAXANE COMPOSITIONS, Ulrich Michel, et al., Owner of Record: *Wacker-Chemie GmbH, Monich Germany,* Attorney or Agent: Marion D. Ford, Ex. Gp.: 151

4,551,331, Re. S.N. 870,245, Filed June 3, 1986, Cl. 424/195.1, EASILY DISPERSIBLE DIETARY FIBER PRODUCT AND METHOD FOR PRODUCING THE SAME, Richard E. Rudin, Owner of Record: *S. C. Johnson & Son, Inc., Racine, Wis.,* Attorney or Agent: Joseph M. Fitzpatrick, et al., Ex. Gp.: 125

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the gen-

eral public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Printing of Use in Another Form Claims

Effective immediately, all claims of prior use of the subject mark in another form contained in applications for Trademark registration will be printed in the *Official Gazette* and on the registration certificates according to the following formats:

First used in another form on _____.
First used in commerce in another form on _____.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

July 15, 1986.

Change in Legal Holidays

The Commissioner's Notice of Sept. 25, 1979, "Change in Legal Holidays," is hereby rescinded, in view of Public Law 98–144, enacted Nov. 2, 1983, which amended the listing of legal public holidays in 5 USC §6103. That amendment took effect in 1986 and added a new legal holiday relating to the birthday of Martin Luther King, Jr. This new holiday is designated for the third Mon. in Jan.

Section 6103, as amended, reads as follows:

New Year's Day, Jan. 1
Birthday of Martin Luther King, Jr., the third Mon. in Jan.
Washington's Birthday, the third Mon. in Feb.
Memorial Day, the last Mon. in May.
Independence Day, July 4.
Labor Day, the first Mon. in Sept.
Columbus Day, the second Mon. in Oct.
Veterans Day, Nov. 11.
Thanksgiving Day, the fourth Thurs. in Nov.
Christmas Day, Dec. 25.

Each of the holidays enumerated will constitute a "Federal holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code. In accordance with 37 CFR 1.6(a) and 1.10(a), the Patent and Trademark Office will not receive papers on these holidays. Actions required to be taken on such days may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

July 15, 1986.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Merri Dee Cosmetics, Inc., Chicago, Ill., Reg. 1,183,408, for the mark "COSMETICS FOR WOMEN OF EXOTIC COLORS", Canc. No. 14,990.

Time Savers, Inc., Montclair, N.J., Reg. No. 430,726, for the mark "TIME SAVERS AND DESIGN", Canc. No. 15,218.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Patents Available for License or Sale

4,231,061. INSTANT COLOR SLIDE RECORDER OF CRT IMAGE. *Samuel Freeman,* 13 Birchwood Court East, Syosset, N.Y. 11791.

4,443,971. HERBICIDE-TOLERANT PLANTS. *Edwin Tocker,* Legal Dept., E. I. du Pont de Nemours and Co., Wilmington, Del. 19898.

4,588,863. SYSTEM FOR FACILITATING PROFESSIONAL TELEPHONE COMMUNICATION. *James M. Ress,* 5300–27th St., North Arlington, Va. 22207.

4,598,241. RECTIFIER COMMUTATION IN ELECTRICAL MACHINES. *M. Sereda,* C. P. 358, Succ. K Montreal, Quebec, Canada H1N 3L3. (514) 861–7670.

Adverse Decisions in Interference

In the designted interferences involving the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,905,790, Edward T. Strickland, METHOD AND APPARTUS FOR MANUFACTURING GLASS FIBERS, Interference No. 100,382, decided Sept. 22, 1983, claim 1.

Patent No. 4,168,314, Burton G. Christensen and Frank P. DiNinno, 6-1'-HYDROXYETHYL)-2-AMINOETHYLTHIO-PEN-2-EM-3-CARBOXYLIC ACID, Interference No. 100,992, decided Mar. 4, 1986, claims 1 & 2.

Patent No. 4,260,618, Burton G. Christensen and Frank P. DiNinno, 6-1'-HYDROXYETHYL)-2-SUBSTITUTED-PEN-EM-2-CARBOXYLIC ACID, Interference No. 100,991, decided Mar. 4, 1986, claims 1, 2 & 3.

Patent No. 4,264,307, Siegmund A. Neuwirth, DENTAL REDUCING TOOL, Interference No. 101,005, decided May 13, 1986, claims 1–8, 14 & 15.

Patent No. 4,299,720, Maged A. Osman, Terry J. Scheffer, Laszlo Revesz and Jurgen Markert, LIQUID CRYSTAL MIXTURE, Interference No. 101,309, decided May 8, 1986, claims 7, 11 & 12.

Patent No. 4,365,033, Yuval Halpern and Donna M. Mott, FLAME-RETARDANT POLYMER COMPOSITIONS CONTAINING METAL OR AMINE SALTS, Interference No. 101,181, decided May 15, 1986, claims 4, 6 & 7.

Patent No. 4,380,514, Guenther Seybold, PREPARATION OF OPTICAL BRIGHTENERS, Interference No. 101,499, decided June 3, 1986, claims 1–7.

Patent No. 4,425,090, Gerhard Hansen, APPARATUS FOR PRODUCING A HEAT-SEALABLE CONTAINER, Interference No. 101,327, decided May 16, 1986, claims 3, 11 & 12.

Patent No. 4,462,078, Ron Ross, COMPUTER PROGRAM PROTECTION METHOD, Interference No. 101,445, decided Apr. 24, 1986, claims 1–3.

Patent No. 4,474,793, Barry C. Ross, Graham Johnson and Michael E. Yeomans, 7-OXO-4-THIA-1-AZA-(3,2,0)HEPTANE AND 7-OXO-4-THIA-1-AZA-(3,2,0)-

HEPT-2-ENE DERIVATIVES, Interference No. 101,521, decided June 9, 1986, claims 1–3 and 5–6.

Patent No. 4,512,416, David R. Smith, FLAT FOLD IMPLEMENT FRAME, Interference No. 101,464, decided June 3, 1986, claim 1.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

Removal from Register

Pursuant to the provisions of 37 CFR §10.11(b), a letter was directed on Nov. 18, 1985, to the last post office address furnished to the Office of Enrollment and Discipline by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Patent Agents.

CAMERON WEIFFENBACH,
May 21, 1986. *Director, Office of Enrollment & Discipline.*

Crawford, James A., 11 Commerce St., Apt. 1437, Newark, N.J. 07102

Flynn, Steven H., 2187 Pond View Ct., Reston, Va. 22091

Gladding, Francis N., Sr., O'Brien & Jacobson, 1325 G St., N.W., Washington, D.C. 20005

Tachner, Leonard, Fischer, Tachner & Strauss, Suite 270, 1301 Dove St., Newport Beach, Calif. 92660

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Teeter, Robert T., Aluminum Co. of America, Legal Dept., Pat. Div., Alcoa Center, Pa. 15069

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Tobia, Annette M., Western Elec. Co., Inc., Legal & Pat. Org., P.O. Box 900, Princeton, N.J. 08540

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Toperzer, Robert S., LFE Corp., 1601 Trapelo Rd., Waliham, Mass. 02154

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Torsiglieri, Arthur Joseph, Bell Telephone Laboratories, Inc., Rm. 3B–313, 600 Mountain Ave., Murray Hill, N.J. 07971

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Troseth, Frank P., 7724 Roundrock Rd., Dallas, Tex. 75240

Trudeau, Raymond, Leggat, Colby, Rioux, Flynn, Demers & Swift, Suite 3301, 1155 Dorchester W., Montreal, Canada

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Tucker, Laurey Dan, Hubbard, Thurman, Turner & Tucker, 1200 N. Dallas Bk. Tower, LBJ Freeway at Preston Rd., Dallas, Tex. 75250

Tuite, Richard E., Central & South West Services, Inc., 2700 One Main Pl., Dallas, Tex. 75230

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PATENT NOTICES

Certificates of Correction for the Week of Aug. 12, 1986

B1. 4,445,789	4,536,754	4,564,757	4,582,575
PP. 5,569	4,537,751	4,565,181	4,583,007
PP. 5,570	4,537,829	4,565,221	4,583,089
Re. 31,999	4,538,260	4,565,948	4,583,100
Re. 32,044	4,538,885	4,567,751	4,583,113
Re. 32,098	4,541,633	4,567,869	4,583,298
De. 283,067	4,541,705	4,568,434	4,583,351
4,079,144	4,541,706	4,569,047	4,584,204
4,253,164	4,541,936	4,569,331	4,584,284
4,401,199	4,542,059	4,569,938	4,584,407
4,404,247	4,542,854	4,570,390	4,584,425
4,438,255	4,544,152	4,570,695	4,584,738
4,443,789	4,544,256	4,570,793	4,584,811
4,445,761	4,544,654	4,571,612	4,584,875
4,449,793	4,544,734	4,571,937	4,585,113
4,451,137	4,545,019	4,572,068	4,585,261
4,454,087	4,545,848	4,572,212	4,585,301
4,456,382	4,546,499	4,572,653	4,585,600
4,459,313	4,548,577	4,572,849	4,585,943
4,471,379	4,548,939	4,572,961	4,586,107
4,473,498	4,549,071	4,574,141	4,586,130
4,479,354	4,549,145	4,574,394	4,586,151
4,482,886	4,550,098	4,574,756	4,586,209
4,487,340	4,551,003	4,574,843	4,586,305
4,489,890	4,551,586	4,575,030	4,587,186
4,493,019	4,552,679	4,575,407	4,587,278
4,496,640	4,553,854	4,575,429	4,587,374
4,496,768	4,553,979	4,576,209	4,587,564
4,497,813	4,554,191	4,576,327	4,587,616
4,498,109	4,554,392	4,576,555	4,587,623
4,502,976	4,555,064	4,576,701	4,587,685
4,506,714	4,555,264	4,577,022	4,587,921
4,512,340	4,555,538	4,577,143	4,588,028
4,512,981	4,555,580	4,577,159	4,588,394
4,516,560	4,555,796	4,577,619	4,588,506
4,517,295	4,556,073	4,578,637	4,588,512
4,519,771	4,556,583	4,578,811	4,588,630
4,520,151	4,559,471	4,578,815	4,588,651
4,522,728	4,560,304	4,578,879	4,588,794
4,523,039	4,561,057	4,578,890	4,589,550
4,523,484	4,561,467	4,579,930	4,589,758
4,523,548	4,561,559	4,580,680	4,590,635
4,524,061	4,561,767	4,580,853	4,590,640
4,524,392	4,561,913	4,581,364	4,590,802
4,527,895	4,562,470	4,581,367	4,590,866
4,530,374	4,563,480	4,581,580	4,590,896
4,530,963	4,563,569	4,581,831	4,592,245
4,533,232	4,563,991	4,582,065	4,592,357
4,535,317	4,564,593	4,582,206	
4,536,061	4,564,638	4,582,429	

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New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
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Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 5, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-22-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	10-12-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-18-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	2-13-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-30-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-18-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-31-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during June 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,452,362 to 3,458,862, inclusive

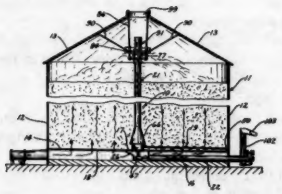
Plant Patents . . . . . Numbers 2,897 to 2,913 inclusive

REEXAMINATIONS

AUGUST 12, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,563,399 (550th)
METHOD FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN
Charles C. Shivers, Corydon, Iowa 50060
Reexamination Request No. 90/000,363, Apr. 27, 1983.
Reexamination Certificate for Patent No. 3,563,399, issued Feb. 16, 1971, Ser. No. 638,257, May 15, 1967.
Int. Cl.[4] B65G *65/46*
U.S. Cl. 414—786



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **2** is confirmed.

Claim **3** was previously disclaimed.

1. The method for circulating free-flowing grain stored in a circular bin having a ventilated floor which comprises:

a. continuously radially moving predetermined relative volumes of grain at a progressively increasing volume flow from given portions of grain extended annularly within the bin for delivery centrally of the bin to successively remove horizontal layers of grain of uniform thickness from the floor of the bin;

b. elevating the centrally delivered grain above the surface of the stored grain; and

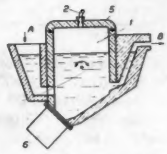
c. distributing the elevated over the top surface of the stored grain so that the stored grain is continuously and uniformly circulated from the bin floor to the top surface of the stored grain.

B1 3,764,305 (551st)
METHOD OF STORAGE AND HEAT-RETAINING FOR TREATED NODULAR CAST IRON
Georg Andersson, Västerås, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Västerås, Sweden
Reexamination Request No. 90/000,706, Jan. 10, 1985.
Reexamination Certificate for Patent No. 3,764,305, issued Oct. 9, 1973, Ser. No. 118,957, Feb. 25, 1971.
Continuation of Ser. No. 703,175, Feb. 5, 1968, abandoned.
Claims priority, application Sweden, Feb. 10, 1967, 1860/67
Int. Cl.[4] C22C *33/08*
U.S. Cl. 75—130 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

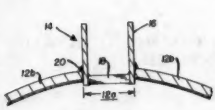
Claims **1** and **2** are determined to be patentable as amended.

1. Method of *continuously or semi-continuously* manufacturing, storing and [heat-]retaining *the heat content of* nodular cast iron including *continuously or semi-continuously* pouring melt consisting essentially of iron into the inlet of a double-sided closed induction furnace of submerged resistor type with a central hearth and inlet and outlet channels separated from the hearth and with at least one inductor unit communicating with said hearth separately from said inlet and outlet channels, filling said furnace with melt to such a height that a closed space is formed above the melt in the central hearth of the



furnace *thereby closing off said inlet and outlet channels*, which space thus is sealed from the atmosphere, evacuating air from said space and introducing protective gas into the space at a pressure above atmospheric together with a component comprising magnesium, thus forming nodular cast iron, storing said nodular cast iron and keeping it hot in said furnace for a considerable time, and *continuously or semi-continuously* tapping off the hot iron through the outlet.

B1 3,815,213 (552nd)
METHOD OF MAKING AN IMPROVED SLOT DRAINAGE CULVERT
Ralph E. Evans, Middletown, Ohio, and Howard E. Blower, Oakland, Calif., assignors to Armco Steel Corporation, Middletown, Ohio
Reexamination Request No. 90/000,881, Oct. 10, 1985.
Reexamination Certificate for Patent No. 3,815,213, issued Jun. 11, 1974, Ser. No. 307,137, Nov. 16, 1972.
Division of Ser. No. 60,516, Aug. 3, 1970, Pat. No. 3,714,786.
Int. Cl.[4] B23P *11/02*
U.S. Cl. 29—446



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7** is confirmed.

1. A method of making an open slot culvert, for positioning in drainage area with the open slot at the top so that any surface drainage water will flow through the slot and directly into the culvert, the culvert being satisfactorily backfilled by utilizing any suitable material with the upper surface of the drainage area being substantially on a level with the upper surface of the open slot of the culvert, of the type which includes a metallic pipe section, split longitudinally along its upper side to form a narrow slot, and grate means secured in said slot, said grate means comprising two spaced, vertical bearing members substantially normal to the axis of said pipe section and extending

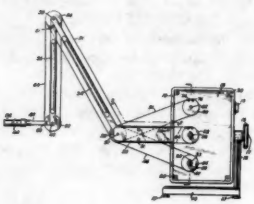
longitudinally over the major portion of the length of said slot and being joined by spacer means substantially normal to said vertical bearing members and being located substantially at the neutral axis of the pipe section wall, which comprises the steps:

a. providing a grate means comprising two elongated parallel vertical bearing members in spaced relation and joined by spacer means substantially normal to said bearing members;
b. longitudinally splitting a metallic pipe section along its upper end to form a narrow slot;
c. inserting said grate means within said slot;
d. setting the position of said bearing members so that they are substantially normal to the axis of said pipe section and so that said spacer means are located substantially at the neutral axis of the pipe section wall; and
e. welding both sides of said grate means to said pipe section wall.

B1 4,014,207 (553rd)
SECTOR SCANNING ULTRASONIC INSPECTION APPARATUS

Edward P. Meyer, Boulder, and William L. Wright, Longmont, both of Colo., assignors to Picker Electronics, Inc., Northford, Conn.

Reexamination Request No. 90/000,793, Jun. 5, 1985.
Reexamination Certificate for Patent No. 4,014,207, issued Mar. 29, 1977, Ser. No. 572,058, Apr. 28, 1975.
Division of Ser. No. 62,143, Aug. 7, 1970, Pat. No. 3,924,452, which is a continuation of Ser. No. 801,882, Oct. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 373,312, Jun. 8, 1964, abandoned.
The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.
Int. Cl.[4] G01N *29/00, 29/04*
U.S. Cl. 73—621



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

New claims **11** and **12** are added and determined to be patentable.

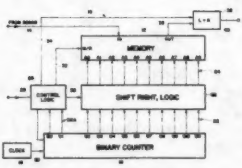
1. In an ultrasonic apparatus for investigating the internal structure of an object and having electroacoustic transducer for transmitting ultrasonic signals through an object to be investigated and for receiving reflected ultrasonic signals, an ultrasonic generator connected to said transducer, a readout device for translating reflected ultrasonic signals received by said transducer into a visible reproduction of reflections from and within said object being investigated, the combination comprising:

a. supporting means supporting the electroacoustic transducer for restraining movement of the transducer to emit signals having axes in a single predetermined plane while the transducer is substantially in contact with the surface of said object, said supporting means comprising:
i. a base;
ii. a first arm pivotally connected to said base for movement about a first axis transverse to said predetermined plane;
iii. a second arm pivotally connected to said first arm for movement about a second axis transverse to said predetermined plane; and,
iv. a third arm pivotally connected to said second arm for movement about a third axis transverse to said predetermined plane, the transducer being connected to said third arm for transmitting and receiving ultrasonic signals having signal axes substantially in said predetermined plane;
b. first signal generator means responsive to movement of said third arm for providing first electrical signals corresponding to direction of emission of said ultrasonic signals;
c. second signal generator means responsive to movement of said second and first arms for providing second and third electrical signals respectively related to angular positions of said third and second axes about said second and first axes, respectively;
d. conversion means responsive to said second and third electrical signals for providing a fourth electrical signal representative of x and y coordinate positions of said transducer; and,
e. means for transmitting said first and fourth electrical signals to said readout device for producing a visual representation of the location of said transducer and of the direction of emission of said ultrasonic signals from said transducer in said predetermined plane.

B1 4,322,827 (554th)
RANGE EXPANDER FOR SONAR SYSTEM

Ronald G. Weber, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Reexamination Request No. 90/000,693, Dec. 20, 1984.
Reexamination Certificate for Patent No. 4,322,827, issued Mar. 30, 1982, Ser. No. 189,047, Sep. 22, 1980.
Int. Cl.[4] G01S *15/08*
U.S. Cl. 367—99



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2** and **6** are cancelled.

Claims **3**, **4**, **5**, **7** and **8** are determined to be patentable as amended.

[1. Apparatus for extending the distance range of a sonar apparatus, comprising:

(a) a clock of selected period;
(b) digital binary counter means responsive to said clock; said counter means having a plurality of output terminals Q0, Q1, Q2, Q3, . . . QN;
(c) a random access memory having a plurality of input address control terminals A0, A1, A2, A3, . . . AN; a signal input and signal output means, and a read/write control input terminal;
(d) a multi-channel switching means, whereby a selected

single memory address control terminal can be connected alternately to one or another of two selected Q terminals of said counter; and

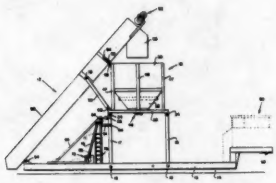
(e) means to synchronously control both said read/write operations of said memory, and said switching of said switching means.]

B1 4,348,146 (555th)

SELF-ERECTING SURGE BIN

J. Donald Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Reexamination Request No. 90/000,848, Aug. 29, 1985.
Reexamination Certificate for Patent No. 4,348,146, issued Sep. 7, 1982, Ser. No. 148,509, May 9, 1980.
Division of Ser. No. 912,501, Jun. 5, 1978, Pat. No. 4,249,351.
Int. Cl.[4] B65G *67/08*
U.S. Cl. 414—332



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **5** is confirmed.

Claims **1** and **4** are determined to be patentable as amended.

Claims **2** and **3** dependent on an amended claim, are determined to be patentable.

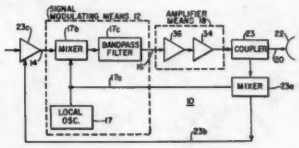
New claim **6** is added and determined to be patentable.

B1 4,475,242 (556th)

MICROWAVE COMMUNICATIONS SYSTEM

Marc Rafal; William T. Joines, and Larry W. Burton, all of Durham, N.C., assignors to Avnet Inc., Ellenville, N.Y.

Reexamination Request No. 90/000,833, Aug. 9, 1985.
Reexamination Certificate for Patent No. 4,475,242, issued Oct. 2, 1984, Ser. No. 440,628, Nov. 10, 1982.
Int. Cl.[4] H04B *1/02*; H04H *1/00*
U.S. Cl. 455—3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A microwave transmitter having a gain and a noise figure for relaying information channels to any of a number of signal distribution systems, comprising:

signal modulating means for receiving an input signal that includes a plurality of information channels and producing an amplitude modulated signal in the microwave frequency range, and

amplifier means responsive to said microwave frequency signal for producing an amplified output signal suitable for microwave transmission to a remote location,

said signal modulating means and said amplifier means having upper power limits which are sufficiently below their respective two-tone third order intermodulation intercept points that each has a carrier-to-triple-beat power ratio at least equal to first predetermined values dependent on the number of said information channels,

said amplifier means having a gain high enough that, notwithstanding power limitations of said signal modulating means, the power of said amplifier output signal is at least equal to a second predetermined value, whereby

the sum of the gain and the noise figure of said transmitter measured in decibels has an upper limit determined by a desired carrier-to-noise ratio and by thermal noise.

REISSUES

AUGUST 12, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,221
VARIABLE DILUTION FILTER

John M. Adams, 2512 Cedar La., Mechanicsville, Va. 23111

Original No. 4,433,696, dated Feb. 28, 1984, Ser. No. 307,973, Oct. 2, 1981. Application for reissue Oct. 2, 1984, Ser. No. 656,993

Int. Cl.[4] **A24D** *1/04, 3/00*

U.S. Cl. 131—336 **19 Claims**

1. In a smoking article the improvements which comprise:
a filter mouthpiece attached to one end of said smoking article by air impervious tipping paper[;] *having*
a second stage filter means mounted in said mouthpiece behind the tobacco portion of said smoking article and free to move in an axial direction in said mouthpiece in response to tapping said mouthpiece on a hard surface;
a first stage filter means rigidly mounted in said mouthpiece behind said second stage filter means such that there is space for axial movement of said second stage filter; and
ventilation holes in said air impervious tipping paper forward of said first stage filter and behind the tobacco portion of said smoking article.

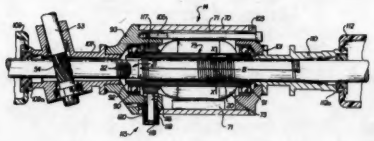
Re. 32,222
STEERING GEAR

Gilbert H. Drutchas, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Original No. 4,415,054, dated Nov. 15, 1983, Ser. No. 405,705, Aug. 5, 1982. Application for reissue Nov. 6, 1984, Ser. No. 668,658

Int. Cl.[4] **B62D** *5/04*

U.S. Cl. 180—79.1 **9 Claims**



1. An assembly for pivoting the steerable wheels of a vehicle upon manual rotation of a steering wheel, said assembly comprising:
a member which is axially movable to effect turning movement of the steerable vehicle wheels;
ball screw and nut means for applying force to said member to move said member axially, said ball screw and nut means including;
thread means connected with said member, rotatable nut means circumscribing at least a portion of said thread means and ball means for transmitting forces between said nut means and said thread means;
an electric motor for rotating said nut means about the central axis of said member, said electric motor including
a stator for providing a magnetic field, and a rotor *means* disposed in a coaxial relationship with said member and rotatable under the influence of the magnetic field from said stator to rotate said nut means relative to said thread means;
control means for energizing the [stator] *rotor means* of said electric motor to rotate said motor and nut means in response to rotation of the steering wheel; and
a rack and pinion gear set for applying force transmitted from the steering wheel to said member and for moving said member axially and imparting rotary motion to said nut means to turn the steerable vehicle wheels upon failure of said electric motor, said rack and pinion gear set including
a pinion gear rotatable with the steering wheel and
a rack gear disposed in meshing engagement with said pinion gear and connected with said member.

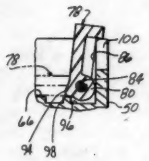
Re. 32,223
MULTILEVEL STACKING CONTAINER

Elsmer W. Kreeger, Howell, Mich., and Edward L. Stahl, Osage Beach, Mo., assignors to Pinckney Molded Plastics, Inc., Howell, Mich.

Original No. 4,423,813, dated Jan. 3, 1984, Ser. No. 381,072, May 24, 1982. Application for reissue Feb. 8, 1985, Ser. No. 699,655

Int. Cl.[4] **B65D** *21/04*

U.S. Cl. 206—506 **6 Claims**



1. In a multilevel stacking container adapted to be stacked on a like container at any one of a plurality of different levels relative thereto, said container including a rectangular bottom, and first and second end walls fixedly secured to and projecting upwardly from respective opposite [ends] *end edges* of said bottom; the improvement wherein each of said end walls comprises [a web-like lower rail fixedly secured to said bottom,] a web-like upper rail vertically spaced above said [lower rail] *bottom*, a plurality of support webs each fixedly secured at *the inner side of* its lower end to the outer side of said [lower rail] *bottom* and fixedly secured at its upper end to the inner side of said upper rail whereby said upper rail is offset outwardly from said [lower rail] *end edge of said bottom* by the thickness of said support webs, a support foot at the lower end of each support web, a support platform at the upper end of each support web spaced downwardly from the upper edge of said upper rail and horizontally offset from the support foot at the lower end of its support web, a support seat on each support web vertically below *the support platform* and horizontally offset from [both] the support platform [and support foot] on the web, means defining a recess on the inner side of said upper rail extending horizontally the entire length of said upper rail and extending downwardly from the upper edge of said upper rail substantially to said support platforms, a stacking shelf, hinge means hingedly connecting said shelf to said upper rail along the lower edge of said recess for hinging movement of said shelf relative to said upper rail between a [generally vertical] stored position wherein said shelf is received within said recess *and located outwardly of the support*

webs and a [generally horizontal] support position wherein said shelf lies upon said support platforms in vertical alignment with said [stacking] *support* feet whereby the [stacking] *support* feet of a like container may be supported on said shelf when said shelf is in said support position to establish a high stacked relationship and may be supported on said support seats when said shelf is in said stored position and said like container is in a first orientation to the one container, [said upper rail being engageable with said shelf] *said like container being supportable upon the one container in a fully nested position* when said shelf is in said stored position and said like container is in a second orientation reversed from said first orientation.

Re. 32,224

POLYURETHANE COATED SAFETY GLASS

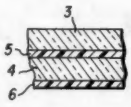
Wolfgang Schäfer, and Helmer Raedisch, both of Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Original No. 3,979,548, dated Sep. 7, 1976, Ser. No. 523,016, Nov. 12, 1974. Continuation of Ser. No. 456,251, Jan. 6, 1983, abandoned, which is a continuation of Ser. No. 417,847, Sep. 14, 1982, abandoned, which is a continuation of Ser. No. 847,321, Oct. 31, 1977, abandoned. Application for reissue Jan. 30, 1985, Ser. No. 696,865

Claims priority, application France, Nov. 16, 1973, 73 40821

Int. Cl.[4] B32B *27/40*

U.S. Cl. 428—423.1 **6 Claims**



1. A safety window comprising at least one glass sheet having bonded thereto an adherent solid transparent layer of a scratch-resistant polyurethane formed by curing a liquid mixture containing (1) a polyglycol ether resulting from the condensation of propylene oxide with trimethylolpropane and containing about 10.5–12% by weight free hydroxyls together with (2) a biuret of 1,6-hexamethylene diisocyanate having about 21–22% by weight isocyanate groups, the weight of said biuret being between about 0.9 and 1.1 times the weight of said polyglycol ether.

Re. 32,225

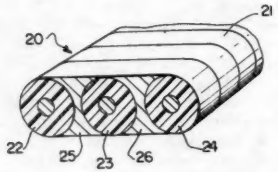
OIL WELL CABLE

David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Original No. 4,409,431, dated Oct. 11, 1983, Ser. No. 291,125, Aug. 7, 1981. Application for reissue May 22, 1984, Ser. No. 613,085

Int. Cl.[4] H01B *7/18*

U.S. Cl. 174—103 **40 Claims**



39. In an electrical cable of elongated cross section having opposite, flattened sides, wherein there is at least one electrical conductor having electrical insulation thereon within the cable, the improvement comprising:

an elongated, force-resisting member within the cable adjacent the insulation on the conductor, said member comprising two opposite edges each of which is adjacent a different one of the cable sides, said member having a cross section joining said edges, said cross section being rigid for resisting transverse compressive forces and extending across the interior of the cable, said member being flexible to allow long radius bending transverse to the longitudinal axis thereof,

said force-resisting member comprising first and second elongated, parallel bodies which abut one another along an interface including a pair of planar surfaces.

Re. 32,226

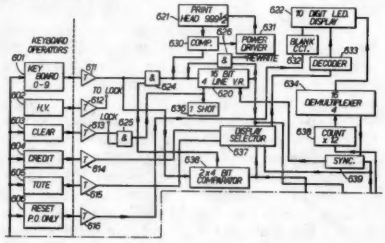
ELECTRONIC FRANKING MACHINES

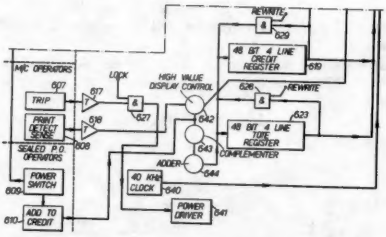
Paul Fuller, Romford; John B. Gillender, Canvey Island; Michael Shacklady, Benfleet, and Samir Basu, Romford, all of England, assignors to Roneo Alcatel Limited, Esses, England

Original No. 4,093,999, dated Jun. 6, 1978, Ser. No. 746,490, Dec. 1, 1976. Application for reissue Sep. 13, 1984, Ser. No. 650,242

Int. Cl.[4] G06F *3/12, 3/02, 15/21;* **H03K** *21/00*

U.S. Cl. 364—900 **28 Claims**





1. In an electronic franking machine comprising:

franking value selection means, operable selectively to provide an electrical input representative of a franking value selected for a desired next franking operation of the machine, for setting the selected franking value into the machine;

a digital electronic input register, having an input connected to said franking value selection means, for receiving and holding said selected franking value;

an electrically adjustable printing device, settable electrically to any selected one of a plurality of different conditions enabling the device to be actuated respectively to print a plurality of different franking values;

setting control circuitry, connected with said input register and said printing device, operable in dependence upon said electrical input to bring about setting of said printing

device to the condition in which it is actuable to print said selected franking value;

a digital electronic total register, for holding an accumulated value representative of the sum of the respective franking values used in preceding franking operations of the machine; and

totalling circuitry, connected between said input register and said total register, for effecting addition of said selected franking value held in the input register to said accumulated value; whereby a new accumulated value is provided, to be held in said total register, after printing of said selected franking value, in place of said accumulated value previously held there,

the improvement wherein said machine comprises an electronics unit which houses franking value selection means, said input register, said total register and said totalling circuitry and a separate printing unit which houses the said electrically adjustable printing device and with which said electronics unit is engaged during the operation of the machine, [said electronics and printing units being readily separable one from the other and having complementary coupling means for setting up operative electrical connections therebetween when the electronics unit is engaged with the printing unit.] *said electronics and printing units nesting together with the electronics unit being carried by the printing unit and with the electronics unit fitting into a spatial envelope defined by the exterior dimensions of the printing unit, the electronics unit being readily separable from the printing unit and the electronics and printing units being connected together by means of a plug projecting from one said unit which directly engages a socket in the other said unit to set up operative electrical connections therebetween when the electronics unit is engaged with the printing unit, said plug and socket connectors being concealed when said electronics and printing units are nested together.*

PLANT PATENTS

GRANTED AUGUST 12, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,778

CHRYSANTHEMUM PLANT NAMED BRIGHTLIGHT

Leonard H. Shoesmith, deceased, late of Woking Surrey, England (by May Victoria Shoesmith, executrix), assignor to Ball PanAm Plant Company, Parrish, Fla.

Filed Apr. 25, 1984, Ser. No. 603,840
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant named Brightlight, as illustrated and described, and particularly characterized by its flat capitulum form and single capitulum type, bright yellow ray floret color, excellent flower substance, diameter of 55–65 cm. across face of capitulum, medium pot height, and semi-upright branching pattern.

5,779

CHRYSANTHEMUM PLANT NAMED REJOICE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 28, 1984, Ser. No. 675,566
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Rejoice, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; anemone capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 6 to 8 cm. at maturity; uniform eight week flowering response; medium plant height; semi-spreading branching pattern; and tolerance of high summer 21° C. night to 37° C. day temperatures for bud initiation and flower development.

5,780

IMPATIENS PLANT NAMED QUASAR

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Oct. 19, 1984, Ser. No. 663,479
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Quasar, as described and illustrated, and particularly characterized by its multiple flowering from leaf axil, vigorous, self-branching growth habit, salmon flower color with excellent keeping quality of flowers, flowering from two (2) leaf whorls at one time making it useful for pot plant use, and by its adaptability to various environments of use.

5,781

CHRYSANTHEMUM REEF

Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysanthemum Breeders Association N.V., Netherlands Antilles

Filed Apr. 12, 1984, Ser. No. 599,701
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinctive variety of chrysanthemum as described and illustrated in the foregoing specification and accompanying drawings.

PATENTS

GRANTED AUG. 12, 1986

ERRATA

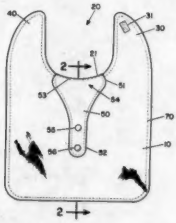
For CLASS	See PATENT NO.
623–001	4,604,762
384–020	4,605,265
406–049	4,605,329
530–324	4,605,512
530–303	4,605,513
530–307	4,605,514
530–307	4,605,515
540–034	4,605,516
540–052	4,605,517
558–244	4,605,518
558–234	4,605,519
558–414	4,605,520
558–313	4,605,521
428–622	4,605,533
524–504	4,605,720
351–213	4,605,969
373–108	4,606,055
381–099	4,606,071

PATENTS

GRANTED AUGUST 12, 1986

GENERAL AND MECHANICAL

4,604,758
SAFETY BIB FOR ENGAGING A PACIFIER
Christine L. Grasberger, 5 Care Free La., and Eileen M. Martin, 6 Care Free La., both of Gansevoort, N.Y. 12831
Filed Dec. 18, 1985, Ser. No. 810,516
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—49 R **15 Claims**



1. An article for enaging the ring of a pacifier and for holding the pacifier about the neck of an infant, said article comprising:

a first flat panel having a substantially rectangular shape and having a notch for engaging the infant's neck;

the notch being defined by an arcuate portion in the first panel, said arcuate portion conforming to the infant's neckline and forming right and left tabs for location around the infant's neck;

interlocking means attached to at least one of the tabs for engaging the other tab thereby closing the notch about the infant's neck;

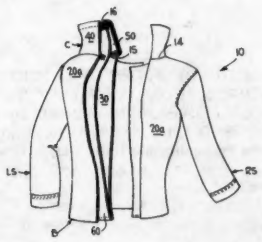
a second flat panel having upper and lower ends;

the upper end of the second panel having an arcuate edge engaging the arcuate portion of the first panel;

the lower end of the flat panel having means for engaging the pacifier ring; and

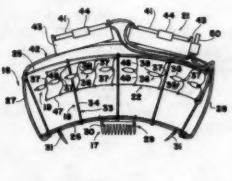
the engagement between the arcuate edge and the arcuate portion causing the underside of the flat panel to be positioned adjacent to the overside of the first flat panel.

4,604,759
FIREFIGHTER'S SUIT WITH WATERPROOF COLLAR
J. Robert Bowman, Manchester, and Eleanor T. Pinkham, Northwood, both of N.H., assignors to Globe Manufacturing Company, Pittsfield, N.H.
Continuation-in-part of Ser. No. 761,812, Aug. 2, 1985, abandoned. This application Sep. 26, 1985, Ser. No. 780,339
Int. Cl.[4] A41D *10/00*
U.S. Cl. 2—81 **6 Claims**



1. A firefighter's coat which includes a body portion, left and right sleeve portions and a collar portion; said body portion including a flame-resistant shell having an upper edge and a heat-resistant liner having an upper edge; said collar portion including a flame-resistant outer collar part having a lower edge and an upper edge, and a fire-resistant inner collar part having a lower edge and an upper edge; at least a portion of the upper edge of said shell being stitched to the lower edge of said outer collar part to provide an outer neckline for said coat, the upper edge of said liner being stitched to the lower edge of said inner collar part to provide at least a portion of an inner neckline for said coat, the upper edges of said outer and inner collar parts being stitched together to close said collar portion along the periphery thereof; and wherein said firefighter's coat includes a waterproof interliner which extends essentially freely from between said shell and said liner upwardly between said inner and outer necklines without connection thereto except possibly at their opposite ends, and then between said outer and inner collar parts, such that any moisture which seeps through the stitching along said outer neckline will be prevented from penetrating to said inner collar part or said liner and, due to gravity, will be caused to flow downwardly between said interliner and said shell.

4,604,760
BRIDAL HEADDRESS APPARATUS
Sheri K. Coin, 519 Ave. E, Apt. B, Billings, Mont. 59102
Filed Feb. 20, 1985, Ser. No. 703,393
Int. Cl.[4] A42B *1/16*
U.S. Cl. 2—209.2 **20 Claims**



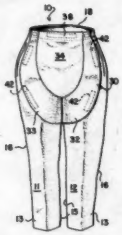
1. Bridal headdress apparatus including a frame portion, a fastening portion, a supporting portion, an illuminating portion, a power supplying portion and a circuitry portion; said frame portion including a face section formed with spaced generally parallel horizontal elongated upper and lower peripheral sections, end sections extending between said horizontal sections; said fastening portion including at least one securing member extending from said lower horizontal section; said supporting portion including an intermediate section extending between said horizontal upper and lower peripheral sections; said illuminating portion including a plurality of spaced miniature incandescent lamps disposed along the length of said supporting portion; said power supplying portion including a plurality of thin elongated batteries, said batteries being mounted remote from said lamps; said circuitry portion including conductive means connecting said spaced lamps in parallel electrically with said batteries and switch means controlling the flow of electrical current from said batteries to said lamps.

4,604,761

WOMAN'S OUTER GARMENT

Joyce Wright, 2155 Harshman Blvd., Springfield, Ohio 45504

Filed Nov. 18, 1985, Ser. No. 798,790
Int. Cl.[4] A41D 1/06
U.S. Cl. 2—227 5 Claims



1. An outdoor sportswear trouser-like garment for women comprising:

left and right leg sections closed about the hips and buttocks having a waistband encircling the waist and being partially closed at the abdomen defining and forming a front opening which extends generally from the crotch region toward the waistband,

a yoke having a rear portion fastened at the back of the garment adjacent the waistband and extending through the crotch upwardly and having a front panel formed in fully closed relation to said opening and normally covering said opening,

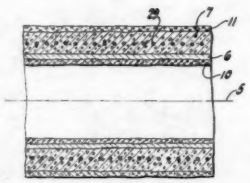
means attaching said front panel to said leg sections adjacent said waistband.

4,604,762

ARTERIAL GRAFT PROSTHESIS

Thomas C. Robinson, Berkeley, Calif., assignor to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed Feb. 13, 1981, Ser. No. 234,116
Int. Cl.[4] A61F 1/00, 1/24
U.S. Cl. 623—1 5 Claims



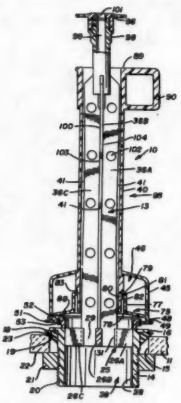
1. An arterial graft prosthesis formed of a core zone of porous elastomer disposed about the longitudinal axis of the prosthesis, an inner zone of solid elastomer concentric with and homogeneously joined to the inside of said core zone, an outer zone of porous elastomer, said outer zone of porous elastomer being concentric with and homogeneously joined to the outside of said core zone.

4,604,763

SEAL MEANS FOR A FLUSH VALVE ASSEMBLY

Richard W. Sprang, Lakeville, Ohio, assignor to Clevepak Corporation, Purchase, N.Y.

Filed Feb. 19, 1985, Ser. No. 703,050
Int. Cl.[4] E03D 1/34
U.S. Cl. 4—391 4 Claims



1. A flush valve assembly for a water closet having a tank with a discharge opening comprising:

a spud having a tubular body portion with an outer generally cylindrical surface and an axially upper end;

a radial groove recessed in the outer surface of said tubular body portion in close proximity to its axially upper end, said body portion being adapted to be received in the discharge opening of a water closet tank with said radial groove positioned interiorly of the tank;

resilient gasket means carried by said radial groove and extending radially outwardly therefrom;

guide means extending axially upwardly from the tubular body portion of said spud and positioned interiorly of the tank;

tube means having a lower end portion and being slidably associated with said guide means;

skirt means carried by the lower end portion of said tube means, said skirt means extending outwardly from said tube means and defining a circular valve seat; and

an anti-cavitation plate positioned interiorly of said skirt means, and being affixed to the lower end portion of said tube means;

said anti-cavitation plate defining a radially oriented wall between said skirt means and said tube means;

said anti-cavitation plate, said tube means and said skirt defining a bell like float cavity;

said anti-cavitation plate having means for draining said float cavity.

4,604,764

TAP FOR THE DELIVERY OF LIQUIDS FOR THE CONVERSION FROM AUTOMATIC TO MANUAL

Fava Enzo, 5, Via Simboli, 62019 Recanati, Italy

Filed Oct. 18, 1984, Ser. No. 661,858
Claims priority, application Italy, Oct. 3, 1984, 48941 A/84
Int. Cl.[4] E03C 1/05
U.S. Cl. 4—623 10 Claims

1. A fluid delivery system, which can be alternately manually or automatically controlled, wherein the delivery system comprises:

a body for directing fluid to a desired location;

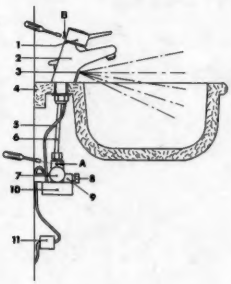
means for supplying fluid to the body;

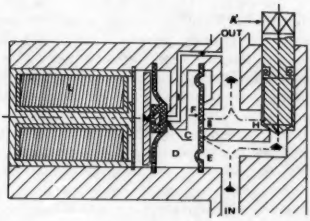
regulator means for manually controlling flow of fluid through the body;

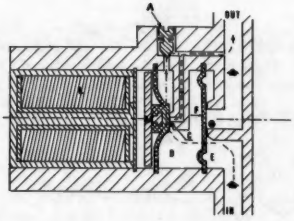
locking means for releasably locking the regulator means in an open position so that fluid can flow through the body;

electrically operated valve means in the fluid supply means, wherein the valve means is comprised of an automatically controlled fluid flow circuit and a manually controlled fluid flow circuit;

sensing means for detecting presence of an object proximate







the body and for providing an electrical signal in response thereto;

controller means for opening and closing the valve;

means for transmitting the electrical signal to the controller for opening the automatically controlled fluid flow circuit in the valve;

wherein the locking means for the regulator is engaged when the manually controlled fluid flow circuit in the valve is closed, and the locking means is released when the manually controlled fluid flow circuit in the valve is open.

4,604,765

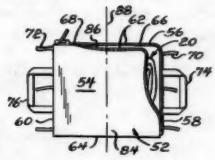
ARTICLE RETAINING DEVICE

Dennis B. Schultz, 418 N. Van Buren, East Dundee, Ill. 60118

Filed May 3, 1984, Ser. No. 606,469

Int. Cl.[4] A47G *9/08;* **A45F** *3/04;* **B65D** *30/04*

U.S. Cl. 5—413 **39 Claims**



1. An article retaining device, comprising:

a sleeping bag comprising, a pair of padded panels with one of the panels overlying the other panel, said panels having a first end portion, a second opposed end portion, and a central portion therebetween, said panels being folded to a configuration of reduced length to define a pocket between the panels and such that the central portion defines an opening communicating with the pocket to receive articles for storage in the pocket;

a cover for the sleeping bag comprising, a pair of flexible sheets with one of the sheets overlying the other sheet, said sheets having a pair of opposed end edges and a pair of opposed side edges connecting the end edges, said sheets having an opening along at least one of the edges to receive the folded bag, and said sheets defining a cavity sufficiently large to receive and cover the folded bag;

means for closing the cover opening, the bag and cover being folded along a central fold line such that opposed edges of the cover are generally aligned with each other; and means for securing said aligned edges together.

4,604,766

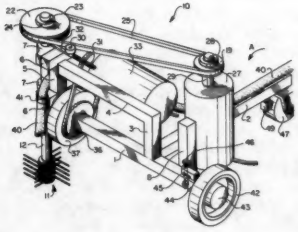
TILE CLEANING DEVICE FOR REMOVING CALCIUM BUILD-UP IN POOLS

Dennis Avery, 3328 Del Paso Blvd., Sacramento, Calif. 95815

Filed Jun. 7, 1985, Ser. No. 742,562

Int. Cl.[4] E04H *3/20;* **A46B** *13/04*

U.S. Cl. 15—50 C **16 Claims**



1. A tile cleaning device for removing calcium buildup from tile which occurs substantially at and above a liquid level in a pool or the like comprising, in combination:

a wheeled frame means, placed adjacent a ledge surrounding the pool,

brush means extending from said frame means oriented to address the tile,

and pressure means on said frame means for urging said brush means in striking relationship against the tile including a single driven wheel proximate the pool ledge whereby said driven wheel tends to drive away from the

pool ledge providing at least a portion of said pressure means on said brush means

whereby calcium deposits and the like are fractured off the tile.

4,604,767

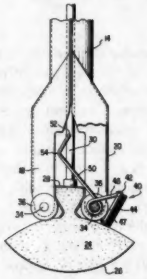
WRINGER MOP

Richard P. Burkhart, and Edward C. Gemperle, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Jan. 29, 1985, Ser. No. 695,982

Int. Cl.[4] A47L *13/12, 13/144*

U.S. Cl. 15—119 A **13 Claims**



1. A scrubbing attachment and wringer mop, the mop including a U-shaped yoke having a pair of spaced, parallel and elongated abutment members each mounted on a respective end of the U-shaped yoke, the bight of the yoke being secured to one end of an elongated handle, a mop head including a sponge having a rear portion fixedly secured to a rigid, elongated spine, the major portion of the sponge normally extending beyond the ends of the yoke, the front portion of the sponge being its working surface, the sponge having a normal thickness greater than the distance between the two elongated and parallel abutment members, means for retracting the sponge between said two abutment members towards said handle to thereby squeeze the sponge and wring out liquid therein, said scrubber attachment defined by a rigid frame carrying a scrubber pad, the rigid frame having at least one apertured ear carried thereby, said rigid scrubber frame being mounted for limited rotary oscillatory movement on one of said parallel and elongated abutment members, with said one abutment passing through said at least one apertured ear, said rigid frame carrying an arm, said spine abutting said arm when said sponge is retracted to thereby rotate said scrubber pad to a position beyond the working surface of the retracted sponge, whereby a scrubber pad mounted on said scrubber attachment may be applied to and rubbed against a surface such as a floor or a wall, which is to be cleaned and whereby the scrubber pad attachment may be rotated back to its original, non-use position above the working surface of the sponge by a reverse operation of the sponge retracting means.

4,604,768

TRANSPARENT SELF-ADHESIVE BUMPERS FOR PROTECTING HOUSEHOLD OR OFFICE SURFACES OR ARTICLES INCONSPICUOUSLY

Adolph E. Goldfarb, 1432 S. East Wind Cir., Westlake Village, Calif. 91361

Continuation-in-part of Ser. No. 541,541, Oct. 13, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 756,956

Int. Cl.[4] E05F *5/06*

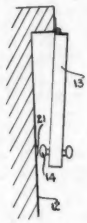
U.S. Cl. 16—86 A **8 Claims**

1. A bumper for use by consumers at home, in protecting patterned household surfaces and household articles from damage due to impact with one another, and comprising:

a resilient, generally transparent body that is substantially free of any opaque attachment, and that is shaped to fit directly against such a household surface; and

means for use by such consumer at home in attaching the body to the household surface of the consumer's choice, without any opaque intermediary, and without interfering with the transparency of the body, so that the bumper permits generally unobstructed view of the household surface;

the portion of the body that does not fit against the surface being curved and substantially free from discontinuities, except at its extreme periphery immediately adjacent to the surface; and



the body being sufficiently thin, and the material of the body having a sufficiently low index of refraction, and the portion of the body that does not fit against the surface having sufficiently shallow curvature, that the body produces only inconspicuous magnification, and at usual viewing angles only inconspicuous apparent displacement, of the pattern detail of the household surface of the consumer's choice said magnification, and at usual viewing angles said apparent displacement, are substantially negligible, wherein: the magnification does not exceed 1.15, and at viewing angles of sixty degrees to the normal or less the apparent displacement does not exceed three millimeters;

whereby the bumper protects the household surface and household articles from damage due to impact with one another while being inconspicuous, even if the household surface has an elaborate pattern with many colors.

4,604,769

HINGE

Erich Röck, Höchst; Klaüs Brüstle, and Helmut Rupprechter, both of Lauterach, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Nov. 17, 1983, Ser. No. 552,909

Claims priority, application Austria, Dec. 6, 1982, 4423/82

Int. Cl.[4] E05D *7/04*

U.S. Cl. 16—238 **6 Claims**

1. An adjustable hinge for mounting a door of an article of furniture to a frame thereof such that the door is movable between an open position away from the frame and a closed position adjacent the frame and extending in a closing plane, said hinge comprising:

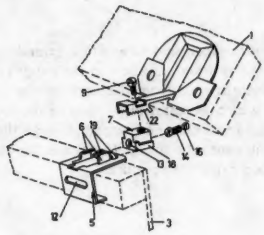
a hinge casing adapted to be mounted in a recess in the door;

a mounting body adapted to be mounted on the frame and including a portion extending in a plane parallel to the closing plane, said portion having extending therefrom a pair of guide flanges extending in directions parallel to the closing plane;

a hinge arm pivotally connected to said hinge casing by means of at least one hinge axle, said hinge arm extending longitudinally in a direction parallel to the closing plane, said hinge arm having side flanges extending in directions parallel to said closing plane;

an intermediate member separate from said hinge arm and mounted on said portion of said mounting body for longitudinal sliding movement with respect thereto in opposite directions parallel to the closing plane, said intermediate member having marginal flanges extending in directions parallel to said closing plane;

clamping means, in the form of a single screw, for clamping side guide flanges between said marginal flanges and said side flanges and thereby clamping said hinge arm to said intermediate member and simultaneously for clamping said intermediate member to said portion of said mounting body, said intermediate member, upon loosening of said single screw, being capable of slidable movement in said opposite directions with respect to said portion of said mounting body; and



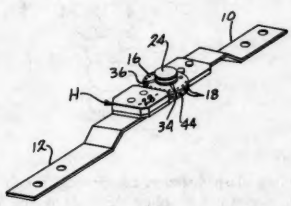
adjusting means for, upon loosening of said single screw, selectively slidably moving said intermediate member and thereby said hinge arm in said opposite directions, said adjusting means comprising an adjusting screw threaded into said intermediate member, said adjusting screw extending orthogonally to said hinge axle and parallel to the closing plane, said adjusting screw having a reduced portion defining an annular groove, and at least one projection extending from said portion of said mounting body into said groove, whereby upon rotation of said adjusting screw said projection prevents axial movement thereof and thus compels said intermediate member to slide in one of said opposite directions with respect to said portion of said mounting body.

4,604,770

SELECTIVELY ADJUSTABLE HINGE

Thomas J. Lang, 326 Chardon Ave. Extension, Chardon, Ohio 44024

Filed Oct. 15, 1984, Ser. No. 660,960
Int. Cl.[4] E05D *15/00*
U.S. Cl. 16—363 **10 Claims**



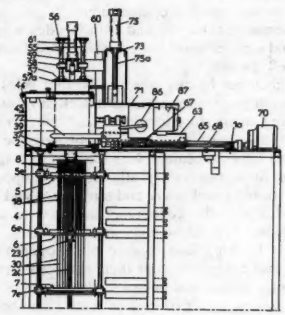
1. A selectively pivotal hinge comprising a hinge having two hinge elements pivotally connected together about a pivot point for free pivotal movement relative to one another with one of said hinge elements having a projecting an abutment thereon, said abutment projecting generally longitudinally of said one hinge element in overlapping relation to said other hinge element, and hinge adjustment means disposed on the other hinge element coacting with the hinge pivot point for selectively changing the limit of pivotal movement of the hinge in coaction with said abutment, and wherein said hinge adjustment means comprises an arm disposed in a plane generally parallel to the planes of pivotal movement of said hinge elements and pivoted to the other hinge element at the hinge pivot point for pivotal movement of said arm relative to said hinge elements in the first mentioned plane, said arm including a transverse pin fixed to said arm and projecting into a selected one of a series of spaced complementally sized openings in said other hinge element and into the path of said abutment to limit the range of relative pivotal movement between said hinge elements, said arm and pin being non-pivotal relative to said other hinge element when said pin projects into the selected of said openings, and means coacting with said arm at said pivot point enabling said arm and pin to be moved as a unit generally parallel to and transverse to said planes and generally parallel to and transverse relative to said hinge elements away from the latter, to remove said pin from said abutment path, thus permitting a greater range of said relative pivotal movement between said hinge elements.

4,604,771

APPARATUS FOR THE PREPARATION OF SKEWERS OF MEAT, VEGETABLES, OR THE LIKE PRODUCTS

Jacques Dollé , 1060 Avenue de la Trillade, 84003 Avignon, France

Filed Oct. 28, 1982, Ser. No. 437,455
Claims priority, application France, Oct. 28, 1981, 81 20367
Int. Cl.[4] A22C *17/02*
U.S. Cl. 17—45 **38 Claims**



1. An apparatus for automatically preparing skewers of meats, vegetables, and other foods, said apparatus comprising a plurality of axially moveable skewering tubes, each of said skewering tubes having an upper end and a lower end, the upper end of each of said skewering tubes comprising means for receiving a spike adapted to be inserted along the longitudinal axis of each said skewering tube, said skewering tubes being slideably mounted within a reception platform having a plurality of holes permitting passage of said tubes, said apparatus further comprising a pressing element comprising means for pressing at least one layer of food positioned on said reception platform.

33. A method for automatically preparing a plurality of skewers of food products in an apparatus which comprises a reception element, at least one pressure element, at least one skewer, and a piercing tube associated with each skewer, said method comprising:

(a) placing at least one layer of food product between said reception element and said pressure element;

(b) positioning each skewer within an associated piercing tube;

(c) simultaneously inserting each said skewer and said associated piercing tube into said at least one layer of food product, each skewer being inserted into said food

through an aperture located in at least one of said reception and pressure elements;

(d) removing each piercing tube from said at least one food product layer and leaving each skewer within said at least one food product layer; and

(e) separating said reception and said pressure elements from said at least one food product layer.

4,604,772

DEVICE FOR TENSIONING BELTS OR THE LIKE

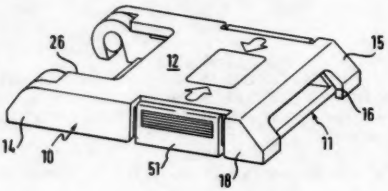
Heino Arff, Hamburg, Fed. Rep. of Germany, assignor to ITW-Ateco GmbH, Norderstedt, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,948

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 8329307[U]

Int. Cl.[4] A44B *11/25*

U.S. Cl. 24—68 R **2 Claims**



1. A two-piece plastic belt tensioning device having and open and latched position comprising:

a base member having top and bottom sides, a beveled aperture and a rivet means for permanently affixing a first end of a belt thereto;

a cover member having top and bottom sides with a peg means integrally formed to said bottom of said cover for engaging an aperture formed in said belt, for affixing sald belt to said cover at a point intermediate the ends of said belt and for engagement with said beveled aperture;

prong and hook means integrally formed on opposite sides of said bottom of said cover and said top of said base respectively for hingedly connecting said base to said cover at one of their respective ends; and

means for latching said base to said cover upon rotation about said hinge means at their respective ends opposite said hinge means said means for latching said base to said cover having a pair of resilient catch members integrally formed on opposite sides of said top of said base and a pair of loop members integrally formed on opposite sides of said bottom of said cover which engage said catch members when said cover is rotated to said final latched position, each of said catch members having an integrally formed tab means which is engageable from the outside of said device for disengaging said catch from said loop when said tab means is properly displaced toward the interior of said device whereby upon latching, said point intermediate the ends of said belt is further tensioned with respect to said first end of said belt.

4,604,773

AUTOMOBILE SEAT BELT TIGHTENER FOR USE WITH CHILD SAFETY SEATS

Kathleen Weber, Ann Arbor, and Joseph B. Benson, South Lyon, both of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

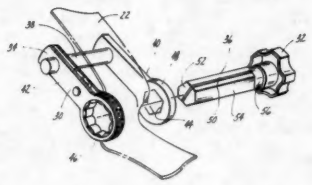
Filed Jul. 22, 1985, Ser. No. 757,795

Int. Cl.[4] A44B *21/00;* **F16L** *33/14*

U.S. Cl. 24—71.2 **6 Claims**

1. A belt tightening mechanism comprising a generally U-shaped frame, said frame comprising a cross pin and two parallel side portions rigidly affixed thereto, a non-circular aperture extending through one side portion and spaced from the cross pin, a selectably reversible ratchet mechanism on the other side portion, said ratchet mechanism having a socket therein of non-circular configuration substantially identical to the aperture and similarly spaced from the cross pin,

a bifurcated reel having a non-circular exterior complementary to the aperture and extending for substantially the



length of the reel, said bifurcation extending through one end of the reel and a handle at the other end of the reel, said handle spaced from the non-circular exterior of the reel by a circular exterior portion of the reel,

whereby said reel must be inserted through the aperture and sufficiently into the socket to engage the circular portion of the reel with the aperture.

4,604,774

SLIDING CLASP FASTENER

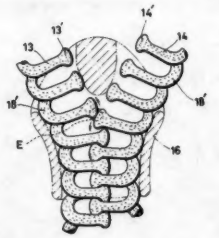
Yoshiharu Yamaguchi, Namerikawa, and Masashi Doi, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Feb. 22, 1985, Ser. No. 704,175

Claims priority, application Japan, Feb. 24, 1984, 59-33764

Int. Cl.[4] A44B *19/40*

U.S. Cl. 24—389 **5 Claims**

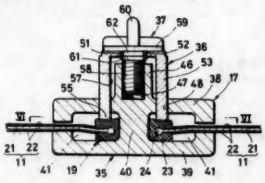


1. A sliding clasp fastener, comprising: a pair of opposed support tapes, rows of coupling elements having a continuous spiral or meander formation provided with coupling heads and made from a plastic monofilament, and a slider member adapted to take said rows of elements into and out of sliding engagement with each other, said monofilament having a multiplicity of indents extending longitudinally thereof, said indents at the coupling heads of the elements being oriented to extend perpendicularly with respect to the plane of the fastener, and a lubricative agent filled in at least some of said indents.

4,604,775
SEALING SLIDE FASTENER

Masahiro Kusayama, Kurobe, Japan, assignor to Yoshida Kogyo, K. K., Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 564,030
Claims priority, application Japan, Dec. 27, 1982, 57-234600
Int. Cl.⁴ A44B *19/32*
U.S. Cl. 24—389 **9 Claims**

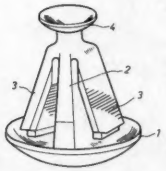


1. A sealing slide fastener comprising:
(a) a stringer tape having a pair of inner opposite edges defining a longitudinal opening therebetween, said stringer tape having a terminal opening communicating with said longitudinal opening;
(b) a pair or rows of coupling elements mounted on said inner opposite edges, respectively;
(c) an elastomeric top stop mounted on said stringer tape around said terminal opening at an end of said pair of rows of coupling elements; and
(d) a slider slidably mounted on said rows of coupling elements for taking the latter into and out of mutual intermeshing engagement, said slider including a slider body having a pair of upper and lower plates and a diamond interconnecting said upper and lower plates and defining a guide channel therebetween for passage therethrough of said rows of coupling elements, and means on said upper plate for pressing said top stop resiliently against said lower plate and said diamond when said slider is located on said top stop, said means comprising a presser having a plurality of pins extending through said upper plate and means for pushing said pins against said top stop.

4,604,776
SPACER FOR MOUNTING BOARDS

Katsumasa Takahashi, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Mar. 29, 1984, Ser. No. 594,732
Claims priority, application Japan, Apr. 20, 1983, 58-58941[U]
Int. Cl.⁴ F16B *19/00*; H05K *7/12*
U.S. Cl. 24—453 **22 Claims**

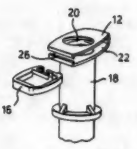


12. A spacer for mounting a first board having a hole therethrough and a second board spaced from the first board, each of the boards having a first surface and a second surface, said spacer comprising:
(a) a first resilient detent member having a first side and a second side, the second side, in use, resiliently engaging the first surface of the first board around the hole in the first board;
(b) a support pillar member having a first end and a second end, the first end of said support pillar member extending from a central portion of the second side of said first resilient detent member and, in use, extending through the hole in the first board;
(c) at least two resilient reverse detent leg members each of which has a first end and a second end, the second ends of said at least two resilient reverse detent leg members extending symmetrically from the second end of said support pillar member, said at least two resilient reverse detent leg members being sized, shaped, and positioned so that, in use, the first ends of said at least two resilient reverse detent leg members are cammed inwardly by passage through the hole in the first board, after which the first ends of said at least two resilient reverse detent leg members are held resiliently against the second surface of the first board by the resiliency of said first resilient detent member; and
(d) a second resilient detent member having a first side and a second side, the first side of said second resilient detent member being joined to the second end of said support pillar member and the second side, in use, resiliently engaging the first surface of the second board, said second resilient detent member being sized and shaped so that, in use, said second resilient detent member will pass through the hole in the first board,
(e) said first resilient detent member, said support pillar member, said at least two resilient reverse detent leg members, and said second resilient detent member all being formed integrally as one piece, and
(f) the portion of said support pillar member adjacent said second resilient detent member having a generally elliptical cross-section parallel to said second resilient detent member.

4,604,777
SPRING RETAINERS

Alan M. G. Meeks, Chineham, England, assignor to ITW Limited, Windsor, England

Filed Sep. 22, 1983, Ser. No. 534,880
Int. Cl.⁴ A47C *1/02*
U.S. Cl. 24—665 **5 Claims**



1. A spring retainer comprising: a hollow elongated housing with a flange integral with said housing at one end thereof having a centrally disposed aperture coaxial with the aperture of said hollow housing, said flange having a transverse slot which intersects said aperture and extends through said flange, said slot being defined by top, bottom and at least one side wall, an actuator contained within said slot having first and second arm members hingedly connected at one of their respective ends to a bridge member, said first arm member having a means for affixing to said housing on its opposite end, said second arm member having a resilient retaining means on its opposite end for affixing said actuator to said housing, said retaining means of said second arm member having first and second positions, a spring having a flexed and an unflexed position being supported between said first and second arm members and having a portion which extends across said centrally disposed aperture when said spring is in its unflexed position and said second arm member is in its first position said portion of said spring being retracted outside of said centrally disposed aperture when said

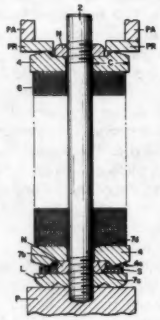
spring is in its flexed position and said second arm is in its second position.

4,604,778

FILLED CALENDER ROLL AND METHOD OF BUILDING SAME

William H. Edwards, Main St., Warner, N.H. 03278

Filed Sep. 20, 1985, Ser. No. 778,021
Int. Cl.[4] B21B *31/08;* B30B *3/00*
U.S. Cl. 29—123 5 Claims



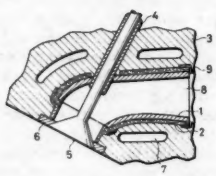
1. In a filled roll, the combination of a load-carrying shaft, a stack of fillings sleeved upon the shaft,
an end head sleeved on each end of the shaft outboard of and in compressing relationship with the stack,
with a compressive-force-locating locus located on the outer end face of each end head radially outwardly of and circumadjacent the shaft periphery as defined by angular radially-disposed surfaces on opposite sides of the locus,
and with the inner end face of each end head having a negative taper at the interface of the end head and the respective end of the stack.

4,604,779

METHOD OF PRODUCING A CYLINDER HEAD WITH A PORT LINER

Yoshinori Narita, and Hirohisa Makino, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 26, 1985, Ser. No. 705,789
Claims priority, application Japan, Feb. 27, 1984, 59-34435; Dec. 26, 1984, 59-281326
Int. Cl.[4] B23P *15/00, 17/00;* B22D *19/00*
U.S. Cl. 29—156.4 WL 8 Claims



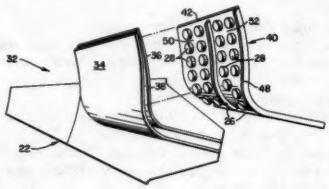
1. A method of producing a cylinder head having a tubular exhaust port liner made of a ceramic material, comprising the steps of:
providing a covering layer of refractory fibers around the outer circumference of said tubular exhaust port liner;
applying a metal cap over each end of said covered tubular exhaust port liner;
setting said covered exhaust port liner into a mold;
casting a cylinder head around said exhaust port liner and fusing to said cylinder head the portions of said metal caps contacting said cylinder head;
performing predetermined treatments on said cylinder head; and
boring said metal caps after performing said predetermined treatments.

4,604,780

METHOD OF FABRICATING A COMPONENT HAVING INTERNAL COOLING PASSAGES

Arthur G. Metcalfe, National City, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Feb. 3, 1983, Ser. No. 463,597
Int. Cl.[4] B21K *3/04;* B23P *15/04*
U.S. Cl. 29—156.8 R 3 Claims



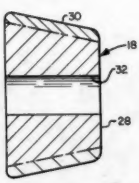
1. A method of fabricating a component having internal passages through which a heat transfer fluid can be circulated to alter the temperature of the component, said method comprising the steps of: installing a unitized insert composed of a carrier fabricated from a first metal and at least one internal passage defining member fabricated from a second metal totally in or between external configuration defining portions of the component that were theretofore fabricated from a metal other than said first metal; bonding said insert member to the aforesaid portions of the component essentially without altering the external configuration of the component; and thereafter leaching from said component only the metal making up the carrier portion of said insert.

4,604,781

HIGHLY ABRASIVE RESISTANT MATERIAL AND GRINDING ROLL SURFACED THEREWITH

Arthur L. Rankin, III, Signal Mtn., Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 19, 1985, Ser. No. 703,160
Int. Cl.[4] B23P *7/00, 15/18*
U.S. Cl. 29—402.07 11 Claims



1. A method of surfacing a new grinding roll comprising the steps of providing in powdered form a highly abrasive resistant alloy; adding a binder to the highly abrasive resistant alloy; mixing the binder with the highly abrasive resistant alloy to form pellets with each pellet having a homogeneous consistency; drying the pellets to set the binder; and providing the new grinding roll with a hardfacing having a composition, by

weight percentages, of 4.0–6.0% Carbon; 3.0–14.0% Manganese; 1.0–2.5% Silicon; 15.0–30.0% Chromium; and 4.0–6.0% Molybdenum; and 0.5–2.0% Boron, the balance being essentially iron by applying the pelletized highly abrasive resistant alloy to the new grinding roll through the technique of bulk welding.

4,604,782

METHOD AND APPARATUS FOR AUTOMATICALLY THREADING SEPARABLE SLIDE FASTENER STRINGERS THROUGH SLIDERS

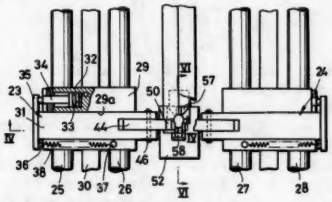
Koichi Kawakami, Toyama, and Mitsuo Sawada, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,051

Claims priority, application Japan, Jun. 19, 1982, 57-105686

Int. Cl.⁴ B21D *53/50*; A41H *37/06*

U.S. Cl. 29—409 **6 Claims**



1. A method of automatically threading a pair of separable slide fastener stringers including rows of coupling elements and pins on ends of the rows of coupling elements through a slider having a guide channel including a pair of throats and a rear end, said method comprising the steps of:

(a) moving the separable slide fastener stringers in one plane along parallel spaced paths, respectively, toward the throats in the slider fixed in position;

(b) inserting the pins into the guide channel through said throats, respectively, in said fixedly positioned slider;

(c) stopping said pins as they emerge from the rear end of the slider when the rows of coupling elements start intermeshing with each other within said guide channel; and

(d) moving said separable slide fastener stringers again at the same speed to bring said rows of coupling elements into intermeshing engagement.

4,604,783

METHOD OF AND APPARATUS FOR FORMING ELEMENT-FREE SPACES IN CONTINUOUS SLIDE FASTENER CHAIN WITH FLY STRIPS

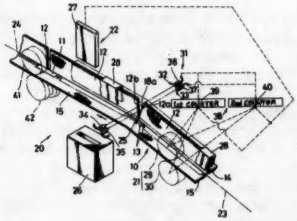
Shinichi Kojima, Kurobe, Japan, and Kiichiro Ishikawa, Marietta, Ga., assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 679,033

Claims priority, application Japan, Dec. 9, 1983, 58-233225

Int. Cl.⁴ B21D *53/52*; A41H *37/06*

U.S. Cl. 29—410 **5 Claims**



1. A method of forming element-free spaces in a continuous slide fastener chain at ends of successive fly strips sewn by at least one line of stitching to the slide fastener chain, the chain having a pair of interengaged rows of coupling elements, said method comprising the steps of:

(a) feeding a continuous ungapped slide fastener chain longitudinally through a gap-forming station, with the fly strips folded about the stitching, to such an extent that the interengaged rows of coupling elements are fully exposed;

(b) detecting portions of the interengaged rows of coupling elements to be removed at said gap-forming station by

(1) temporarily providing a relatively large space between confronting ends of adjacent pair of the folded fly strips when the confronting ends arrive at a fixed turning point spaced a first distance upstream from said gap-forming station,

(2) sensing the departure of the trailing end of a preceding one of the adjacent pair of fly strips from said turning point, and

(3) then sensing the arrival of the leading end of the succeeding fly strip at a second point spaced a second distance upstream of said fixed turning point so that the last-mentioned sensing takes place only when the longitudinal extent of said temporary space is larger than said second distance;

(c) temporarily stopping the feeding of the chain when the chain has advanced through said first distance after said sensing of the trailing and leading ends; and

(d) removing the thus detected portions of the interengaged rows of coupling elements at said gap-forming station while the chain is at rest.

4,604,784

CAM FOLLOWER SHOE

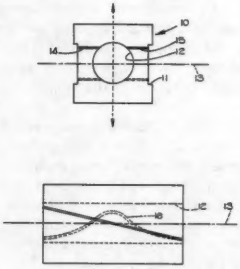
John Downs, Bradford-on-Avon, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Apr. 19, 1985, Ser. No. 725,232

Claims priority, application United Kingdom, Apr. 26, 1984, 8410700

Int. Cl.⁴ B23P *17/00*

U.S. Cl. 29—415 **8 Claims**



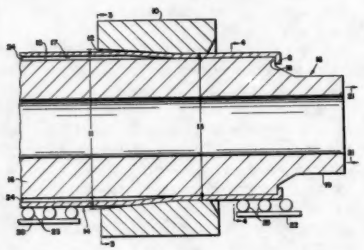
1. A method of making a shoe for use in a cam follower of a fuel injection pump comprises forming and finishing a bore in a block of material and dividing the block into two pieces by means of two axially extending cuts extending outwardly from the bore, the cuts during their formation crossing at least once from one side to the other of a diametral plane of the bore, said plane being disposed at right angles to the plane of movement of the shoes in use, the two pieces forming shoes respectively, each recess in each shoe subtending a total angle of more than 180° whereby rollers located in the recesses will be held captive therein.

4,604,785

METHOD OF MAKING FUEL CHANNEL

Fletcher C. Eddens, Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 21, 1984, Ser. No. 685,265
Int. Cl.[4] B21D *39/02*
U.S. Cl. 29—463 9 Claims



1. A method for making a precisely sized hollow channel from an elongate metal channel preform, said method comprising the steps of:

(a) inserting an elongate metal mandrel into said preform, said mandrel having a cross-sectional configuration conforming at least in part to said preform substantially along the full length of the latter and being dimensioned to provide a loose sliding fit upon assembly with said preform, the coefficient of thermal expansion of said mandrel being greater than that of said preform;

(b) drawing the assembly of said preform and mandrel through a die, said die including a cross section effective to die sink the walls of said preform into surface-to-surface contact with said mandrel during said drawing step substantially throughout the length of said preform;

(c) heating said drawn assembly to a predetermined temperature to expand said mandrel and said preform by amounts dictated by their respective coefficients of expansion, said heating step being effective to deform the cross section of said preform to conform to the lateral expansion of said mandrel;

(d) cooling said assembly to room temperature, said cooling step being effective to reduce said preform to a channel having precisely determined cross-sectional dimensions at said room temperature and being clear of said mandrel;

(e) removing said mandrel from said channel; and

(f) trimming said channel to the desired length.

2. The method as set forth in claim 1 wherein said channel preform is fabricated by the steps of:

a. forming a pair of elongate channel preform components from flat strip metallic stock, each of said preform components having a substantially U-shaped cross-sectional configuration including a base wall intermediate a pair of mutually facing side walls, said side walls terminating in a pair of parallel, longitudinal edge surfaces;

b. positioning said channel components with said longitudinal edge surfaces in mutual contact throughout their length; and

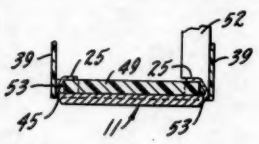
c. welding said contacting edge surfaces together throughout their length, said welding step being effective to provide a preform having a substantially uniform rectangular cross section.

4,604,786

METHOD OF MAKING A COMPOSITE ARTICLE INCLUDING A BODY HAVING A DECORATIVE METAL PLATE ATTACHED THERETO

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Continuation of Ser. No. 439,347, Nov. 5, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,329
Int. Cl.[4] B21D *39/00;* B23P *11/00*
U.S. Cl. 29—513 5 Claims



1. A method of manufacturing a composite article including a body having a decorative metal plate attached thereto, the method including the steps of:

selecting a metal sheet having at least one decorative surface,

machining the decorative surface of the metal sheet to remove a uniform thickness of metal and leave a central island of metal with a decorative surface surrounded on all sides by the machined surface which defines an apron around the island,

removing some of the machined surface apron leaving tabs of apron attached to the island,

bending the tabs away from the machined surface to extend at generally right angles to the decorative surface of the island,

inserting the tabs in openings extending through a surface of the body while positioning the decorative plate against the surface of the body, and

bending the tabs to lock the decorative plate to the body by means of a tool located on the opposite side of the surface of the body to which the plate is attached.

3. A method of manufacturing a metal plate having integral tabs to be attached to a body by inserting the tabs into slots extending through a surface of the body and bending the tags into locking engagement with the body, the method including the steps of:

selecting a metal sheet having a decorative surface,

machining the decorative surface of the sheet to remove a uniform thickness of metal from the sheet, thereby leaving a central island with a decorative surface having the thickness of the original sheet with the island surrounded on all sides by an apron of the thinner machined surface, and

removing the annular apron around some of the island leaving oppositely located tabs extending from the island.

4,604,787

TOOL CHANGER FOR MANIPULATOR ARM

Ralph H. Silvers, Jr., Arlington, Va., assignor to Transamerica Delaval Inc., Los Angeles, Calif.

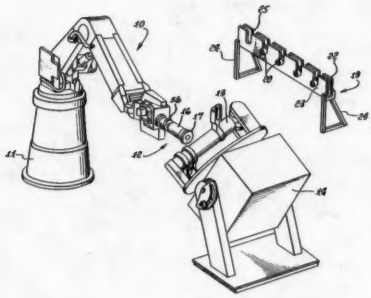
Filed Aug. 15, 1984, Ser. No. 641,060
Int. Cl.[4] B23Q *3/12*
U.S. Cl. 29—568 9 Claims

1. In a tool changer for use with a manipulator arm which provides a first movement along an axis and a second movement laterally to said axis, the combination of:

a coupling comprising a nipple member and a socket member with one of said members including means for connecting the member to the manipulator arm and with the other of said members including means for connecting the member to an end effector and flange means for engaging an end effector rack, and with said members being coupled together solely by an axial compression force and

separated solely by an axial tension force without any external manipulation; and

an end effector rack for receiving and supporting an end effector, said rack having means interengaging with said coupling member flange means for limiting movement of the end effector along the axis of said coupling while



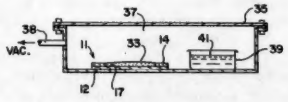
permitting movement laterally, whereby the manipulator arm can position an end effector in said rack solely by a lateral movement, disengage the arm from the end effector solely by an axial movement, engage the arm with an end effector solely by an axial movement in the opposite direction, and remove the end effector from the rack solely by a lateral movement.

4,604,788

METHOD FOR MAKING ELECTRODES FOR DOUBLE LAYER CAPACITORS

Donald L. Boos, Garfield Hts., Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 17, 1985, Ser. No. 745,172
Int. Cl.[4] H01G *9/00*
U.S. Cl. 29—570 **23 Claims**



1. A process for forming an electrode within an electrode cavity, said electrode to be formed from a damp powder mix of solid, conductive, particulate material and an electrolyte, comprising the steps of:

a. adding a predetermined excess of liquid to the damp powder mix to render it possible,

b. pouring the mix into said electrode cavity to slightly overfill said cavity,

c. removing the excess liquid from the poured mix to return the mix to damp powder consistency thereby assuring contact between the solid particles of the electrode.

4,604,789

PROCESS FOR FABRICATING POLYSILICON RESISTOR IN POLYCIDE LINE

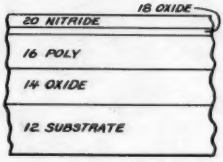
Ronald R. Bourassa, Colorado Springs, Colo., assignor to Inmos Corporation, Colorado Springs, Colo.

Filed Jan. 31, 1985, Ser. No. 696,918
Int. Cl.[4] H01L *21/425, 21/44*
U.S. Cl. 29—576 C **14 Claims**

1. A method for fabricating a polysilicon resistor in a polycide line, including the steps of:

establishing a protective material on top of a polysilicon region designated for location of the polysilicon resistor before silicide contacts said region; then

adding silicide over the polysilicon; and



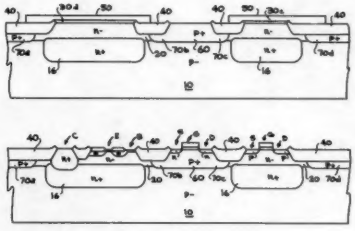
defining the silicide and polysilicon to result in a polysilicon resistor in contact with a polycide line, the resistor being protected from the silicide.

4,604,790

METHOD OF FABRICATING INTEGRATED CIRCUIT STRUCTURE HAVING CMOS AND BIPOLAR DEVICES

Matthew A. Bonn, Saratoga, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 1, 1985, Ser. No. 718,393
Int. Cl.[4] H01L *21/22, 21/265*
U.S. Cl. 29—576 B **9 Claims**



1. An improved method for isolating active devices in an integrated circuit structure containing both CMOS and bipolar devices to simultaneously form channel stops to separate CMOS channels from adjacent CMOS channels and isolation regions to separate bipolar devices from adjoining CMOS devices as well as to separate adjacent bipolar devices from one another comprises: implanting, into a substrate having field oxide portions previously grown thereon, impurities capable of forming one or more channel stops and isolation regions at an energy level sufficiently high to permit penetration of the impurities through unmasked portions of said field oxide.

4,604,791

METHOD FOR PRODUCING MULTI-LAYER, THIN-FILM, FLEXIBLE SILICON ALLOY PHOTOVOLTAIC CELLS

William J. Todorof, 590 Cress St., Laguna Beach, Calif. 92651

Division of Ser. No. 422,944, Sep. 24, 1982, Pat. No. 4,479,027.
This application Jun. 15, 1984, Ser. No. 621,249
Int. Cl.[4] H01L *31/18, 21/302*
U.S. Cl. 29—581 **12 Claims**

1. The method for producing a semiconductor silicon alloy substrate for a photovoltaic cell, comprising the steps of:

providing a ribbon of the silicon alloy in a molten state,

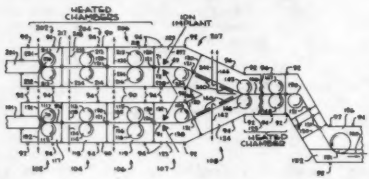
passing the molten silicon alloy ribbon between a first pair of opposed rollers in a first rolling station,

cooling said first pair of rollers for rapidly cooling said molten ribbon to its semi-solidus condition,

then passing said ribbon between other pairs of opposed rollers in other rolling stations,

keeping the ribbon temperature in the range from 740° C. to 1130° C. in said other rolling stations for promoting crystal growth in the ribbon while being rolled,

suddenly quenching the hot rolled ribbon for stopping further crystal growth, and wherein:



said silicon alloy is a ceramic metallic glass semiconductor alloy of silicon characterized by the indicated weight percent of the following elements:

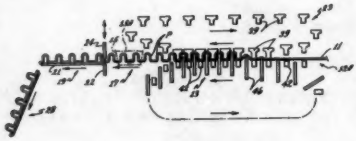
Ingredient	Range in Weight Percent of Total Composition
Silicon	51–88%
Lithium	3–30%
Aluminum	0.5–29%
Fluorine	0.5–8%
Hydrogen	1–12%
Vanadium	0–5%

4,604,792

METHOD FOR MAKING ELECTRO-ACOUSTIC TRANSDUCER APPARATUS

David A. Larson, Downers Grove, Ill., assignor to LFF & Associates, San Diego, Calif.

Filed Dec. 20, 1984, Ser. No. 684,379
Int. Cl.[4] H04R *31/00*
U.S. Cl. 29—594 **7 Claims**



1. A method of making a transducer diaphragm comprising:

using a generally flat stock having a conductive means arranged on at least one face thereof with a series of parallel spaced-apart portions;

pressing on said film on the front face thereof at spaced-apart areas to deform it progressively into a series of substantially U-shaped projections disposed between said areas, each projection having at least one of said portions of said conductive means on the tip portion thereof; and

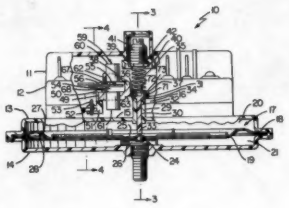
causing said projections to move into close proximity to one another in a parallel manner as said projections are being formed.

4,604,793

METHOD OF MAKING A CONTROL DEVICE

Charles J. Everett, Clinton, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 527,037, Sep. 29, 1983, Pat. No. 4,484,173.
This application Sep. 10, 1984, Ser. No. 648,585
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.[4] H01H *11/04*
U.S. Cl. 29—622 **7 Claims**



1. In a method of making a control device having a housing means provided with an actuator chamber separated from a pressure differential chamber by wall means having opening means therethrough receiving an axially movable actuator pin that transmits axial movement of a movable part in said pressure differential chamber to said actuator chamber and provided with an adjustable range spring disposed in said actuator chamber and being operatively interconnected to said actuator pin to tend to move said actuator pin in one direction relative to said housing means, the improvement comprising the steps of disposing a Hall effect transducer means in said actuator chamber, forming said actuator pin to have magnet means for operating said transducer means as said movable part axially moves said actuator pin relative to said housing means, disposing said magnet means to be in offset relation to the axis of said actuator pin and so as to move in unison therewith relative to said transducer means, forming said magnet means to comprise an arm having opposed ends and a magnet carried by one of said opposed ends, operatively interconnecting the other of said opposed ends of said arm to said actuator pin, forming said actuator pin to have opposed ends, operatively interconnecting said other end of said arm to one of said opposed ends of said actuator pin by forming said other end of said arm to have an opening therethrough and forming said one end of said actuator pin to have a projection extending through said opening in said other end of said arm, forming said spring to comprise a coiled compression spring and have opposed ends, and bearing one of said opposed ends of said spring against said other end of said arm to hold said other end of said arm against said one end of said actuator pin whereby said magnet moves in unison with said actuator pin, said step of bearing said one end of said spring against said other end of said arm also causing said projection of said actuator pin to be received in said one end of said spring whereby said projection acts as a spring retainer for said one end of said spring.

4,604,794

METHOD OF MANUFACTURING BATTERY PLATE GROUPS

Takao Marui, and Tetsuo Uwani, both of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Takatsuki, Japan

Filed Jul. 21, 1982, Ser. No. 400,268
Int. Cl.[4] H01M *6/00*
U.S. Cl. 29—623.1 **2 Claims**

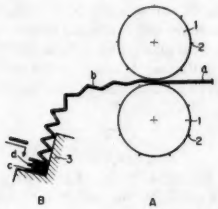
1. A method of manufacturing battery plate groups which comprises

(a) providing a pliable, smooth, continuous glass fiber mat which has a predetermined thickness,

(b) providing a pair of plastic rotors which are aligned in parallel, said rotors including circumferential surfaces and equal numbers of projections extending outwardly from their circumferential surfaces a distance of between 0.7 mm and 2 mm,

(c) spacing said rotors apart such that a clearance is provided between the projections on one rotor and the circumferential surface of the other rotor which is between ¼ and ½ said predetermined thickness of said glass fiber mat,

(d) rotating both said rotors such that the projections from one rotor are displaced by half a pitch from the projections from the other rotor,



(e) passing said glass fiber mat between said rotors such that the projections thereon form alternately-directed folding habits therein at regular intervals along its length and to provide interconnected separator portions which are aligned in an accordion-like fashion,

(f) providing an alternating series of positive and negative battery plates on only one side of said interconnected separator portions, and

(g) sequentially inserting said positive and negative battery plates between adjacent separator portions.

4,604,795

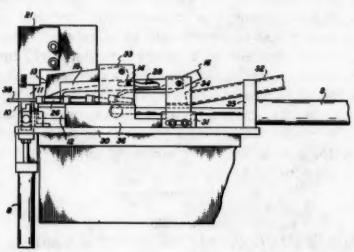
APPARATUS FOR INSTALLING TERMINALS ON WIRES AND INSULATION PODS ON TERMINALS

John C. Collier, York, and David L. Lehman, Lewisberry, both of Pa., assignors to Burndy Corporation, Norwalk, Conn.

Division of Ser. No. 235,619, Feb. 19, 1981, Pat. No. 4,426,772. This application Nov. 2, 1983, Ser. No. 547,830

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—748 **5 Claims**



1. Apparatus for installing a pod onto a terminated wire upon placing the terminated wire into the apparatus comprising:

(a) means for securely holding the terminated wire in response to the terminated wire being placed in the apparatus and for substantially preventing the terminated wire from becoming misaligned in relation to the approaching pods,

(b) means for preventing pods from being fed to the terminated wire until the terminated wire is in correct position for installation of a pod,

(c) means for feeding a strip of interconnected pods to the vicinity of the terminal on the terminated wire,

(d) means for pushing the first pod in the strip onto the terminated wire; and

(e) means for restraining the movement of the remaining pods in the strip, except for the first pod in the strip being pushed, from movement toward the terminated wire while the first pod in the strip is being pushed onto the terminated wire to thereby separate the first pod in the strip from the remaining pods in the strip.

4,604,796

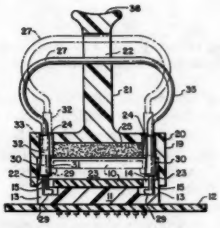
IC EXTRACTOR TOOL

Pyotr Tsipenyuk, Bronx, and Marvin Kober, Spring Valley, both of N.Y., assignors to O.K. Industries Inc., New York, N.Y.

Filed May 31, 1985, Ser. No. 739,708

Int. Cl.⁴ H05K *3/32*

U.S. Cl. 29—764 **9 Claims**



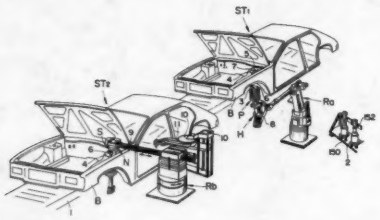
1. An extraction tool for PCC components mounted in a socket, comprising a base member having upper and lower surfaces and openings extending between the upper and lower surfaces, said base member having a square or rectangular configuration defining by side walls at its lower surface a cavity configured to receive the socket when the base member is placed over the socket and to engage and align the base member with the socket, said base member's openings being constituted by holes located at diagonally opposed corners of the rectangular base member and extending between its upper and lower surfaces and terminating within the cavity, a handle member connected to the base member's upper surface, hook means movably mounted in the base member's openings and extending below the base member's lower surface in such manner as to be positioned adjacent the component in the socket when the base member is engaged and aligned with the socket, and actuable means connected to the hook means and mounted to the handle for moving, in a first position of the actuable means, the hook means to a position alongside but laterally spaced from the component, and including means for camming the hook ends laterally inwardly when the actuable means is moved from its first to a second position, said camming means comprising a tapered member connected to the hook means and located within the holes and engaging the hole wall surface such that upward movement of the hook means cams the hook ends laterally inwardly so as to cause the hook ends to engage the component, said actuable means comprising a generally U-shaped member whose ends are each connected to one of the hook means, said U-shaped member being resiliently biased laterally outwardly tending to move the hook means away from the component, said hook means being positioned to enter diagonally located slots at the socket corners for accessing the bottom of the component, whereby upon lifting of the base member by the handle when the actuable member is in its second position the component can be extracted from the socket.

4,604,797

METHOD FOR AUTOMATICALLY ATTACHING SUB-ASSEMBLY TO MAIN ASSEMBLY AND SYSTEM THEREOF USING INDUSTRIAL ROBOTS

Kengo Kitamura, Koshigaya, and Hitoshi Murata, Zama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 30, 1983, Ser. No. 567,178
Claims priority, application Japan, Feb. 5, 1983, 58-16903
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—783 4 Claims



1. A method for automatically attaching a sub-assembly to a main assembly by means of at least one fastener, comprising the step of:

(a) carrying the sub-assembly from a first position to a second position relative to a predetermined location of the main assembly at which the subassembly is attached with a first robot placed at a first work station;

(b) removably attaching the sub-assembly with the first robot at the first work station;

(c) moving the main assembly to a second work station which is at a predetermined distance remote from the first work station upon completion of the removable attachment of the sub-assembly to the predetermined location of the main assembly in step (b), the predetermined distance being at least a limit of distance within which the first robot moves;

(d) carrying an automatic fastening tool toward the predetermined location of the main assembly so as to position the automatic fastening tool on the sub-assembly with a second robot placed at the second work station; and

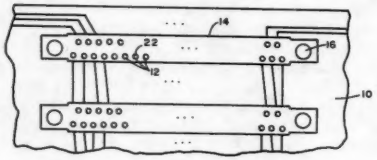
(e) tightening a fastener onto the sub-assembly with the automatic fastening tool attached to the second robot so as to permanently attach the subassembly to the predetermined location on the main assembly.

4,604,798

EXTRACTOR FOR SPRING-LOCK PIN CONNECTORS

James R. Long, Madison, and James A. Kerr, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1984, Ser. No. 626,520
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—764 1 Claim



1. Apparatus for removal of connectors having spring-lock type conductor pins therein from printed circuit boards comprising:

a. means for release of said spring-lock pins from said connectors including collars for engaging springs on said spring-lock pins for compression thereof for disengagement of each spring from said connector;

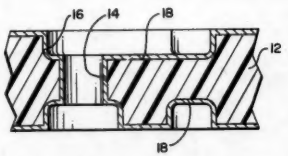
b. extractor means for engagement with said connectors along the sides thereof for disengagement of said connectors from said printed circuit boards; said extractor means including a pair of spaced, downwardly extending members each having a projection along the length thereof for engagement with said connectors along the length thereof and means for moving said members upwardly for disengagement of said connectors from said printed circuit board; said extractor means further including an upper body portion having said pair of spaced members secured thereto and a housing, said means for moving said members upwardly including a threaded shaft secured to said upper body member and extending upwardly through said housing, a nut carried on said threaded shaft in seating engagement with said housing, whereby responsive to rotation of said nut, said pair of members are moved upwardly.

4,604,799

METHOD OF MAKING MOLDED CIRCUIT BOARD

Ismail M. Gurol, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Sep. 3, 1982, Ser. No. 414,954
Int. Cl.[4] H05K *3/02*
U.S. Cl. 29—897 68 Claims



1. A method of manufacturing a circuit carrier comprising:

(a) forming a nonconductive polymer base having a channel and an intersecting through-hole provided therein;

(b) coating said nonconductive base with a conductive material by vacuum deposition to establish a circuit line within said channel including said through hole; and

(c) removing said conductive material except in said channel and said through-hole,

wherein said coating is also applied to a nonchannel area of said base, and comprising the further steps of covering a predetermined area of said nonconductive base and said conductive material in said channels with a mask material after removing said conductive material from the nonchannel area and coating said nonconductive base with a further conductive material, said mask material acting as a mask to prevent deposition of said further conductive material onto said predetermined area, including the further step of planarizing and stress relieving said base after forming.

4,604,800

SEALING CONSTRUCTION FOR A CASING

Tadashi Yamamoto, Shiga; Mitsuo Ichiya, Kadoma, and Keizo Yamaguchi, Ikeda, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Jun. 28, 1984, Ser. No. 625,818
Claims priority, application Japan, Jun. 28, 1983, 58-117715
Int. Cl.[4] B26B *19/38*
U.S. Cl. 30—41 6 Claims

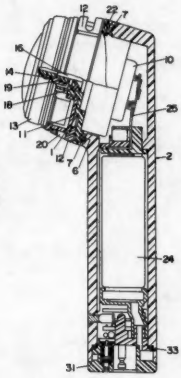
1. A seal construction between first and second casing members of a case for an electric shaver comprising:

a first sealing surface having an annular groove therein;

an annular elastic sealing member having a bottom portion

conforming with and seated in said groove and a top portion which is rounded in cross section and projects above said first sealing surface;

a second sealing surface facing toward said first sealing surface and having an annular protuberance aligned with the rounded top portion of the sealing member, said annular protuberance being more rigid than said sealing member, said annular protuberance having a radius of curva-



ture in cross section, said radius being less than a radius of curvature of said top portion of said sealing member in cross section;

means for pressing said annular protuberance against said annular sealing member to cause deformation thereof around its circumference so that the top portion of the sealing member is deformed around the annular protuberance both radially inwardly and outwardly thereof.

4,604,801

SHAVER WITH INSERTABLE AUXILIARY FRAME

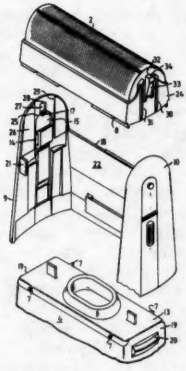
Roland Ullmann, Offenbach, and Hans E. Heintke, Wächtersbach, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Apr. 17, 1985, Ser. No. 724,127

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415122

Int. Cl.[4] B26B *19/38*

U.S. Cl. 30—43.92 **7 Claims**



1. A dry shaver comprising:

a shaver housing including first and second end cheeks;

an elongated interchangeable frame member being displaceably insertable between said first and second end cheeks of said shaver housing, and having ends spaced from one another in the direction of elongation, said interchangeable frame member having first and second substantially parallel longitudinal sides connecting said ends, thereby defining an opening, said ends including means for releasably mounting said interchangeable frame member to said first and second end cheeks of said shaver housing;

means for tensioning and attaching a shaving foil to said interchangeable frame member opposite said opening of said interchangeable frame member;

a reciprocating elongated inner cutting head cooperating with the shaving foil, said inner cutting head being positioned between said first and said second end cheeks of said shaver housing and between said ends of said interchangeable frame member through said opening of said interchangeable frame member; and

said means for releasably mounting said interchangeable frame member includes, on each end of said interchangeable frame member, spring-tensioned locking means having an up ramp, each of said up ramps terminating in a free end, said first and second end cheeks each including an aperture and a spring-tensioned button member disposed in said aperture, each of said button members being displaceable toward one of said ends of said interchangeable frame member, each of said end cheeks also including a recess and a stop member for cooperating with said spring-tensioned locking means, whereby movement of said opening of said interchangeable frame member in the direction of said inner cutting head and between said first and second end cheeks causes inner displacement of said up ramps until said free ends of said up ramps cooperate with said recesses and stop members on said end cheeks of said shaver housing to lock said interchangeable frame member to said shaver housing, and whereby the displacement of said buttons causes the displacement of said up ramps thereby removing said free ends of each of said up ramps from said end cheeks of said shaver housing and unlocking said interchangeable frame member from said shaver housing.

4,604,802

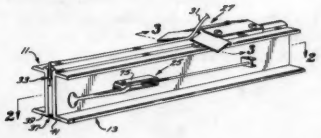
SQUEEGEE BLADE TRIMMER

Soren Samuelsson, 74-259 Candlewood St., Palm Desert, Calif. 92260

Filed Oct. 22, 1984, Ser. No. 663,395

Int. Cl.[4] B25F *3/00*

U.S. Cl. 30—124 **8 Claims**



1. A squeegee blade trimmer comprising:

a squeegee blade holder having top and bottom sides and including a pair of elongated, parallel beam members spaced apar: for receipt therebetween of a squeegee blade to be trimmed;

a pair of parallel shear bars, one mounted on each of said beam members for pressing against the opposite sides of said blade;

a pair of parallel tracks, one mounted on the top side of each beam member;

releasable press means coupled between said beam members for selectively drawing said beam members together; and

a cutting blade holder formed with a pair of runners for

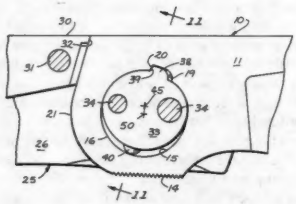
riding on said tracks and including clamp means, said trimmer including a cutting blade for receipt in said clamp means and adapted to be clamped therein with its cutting edge extending laterally of the longitudinal direction or said shear bars wnen said runners of said cutting blade holder are sitting in position on said tracks whereby said press means may be released to enable a worn squeegee blade to be positioned between said shear bars with the worn edge projecting therefrom, said press means activated to draw said beam members together to press said squeegee blade between said shear bars, said cutting blade holder positioned on said squeegee blade holder with said runners riding on said tracks and drawn along said tracks to draw said cutting edge through the body of said squeegee blade to sever said worn edge therefrom.

4,604,803

FOLDING KNIFE

Scott Sawby, 500 W. Center Valley Rd., Sandpoint, Id. 83864

Filed Aug. 8, 1985, Ser. No. 763,666
Int. Cl.[4] B26B *1/04*
U.S. Cl. 30—161 **14 Claims**



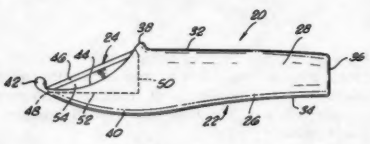
1. A folding knife, comprising:
a knife blade having a tang formed at its inner end;
a handle transversely flanking the tang;
a pivot hole formed through the tang of the knife blade;
bushing means fixed to the handle and extending through the pivot hole in the tang for movably supporting the knife blade about a transverse axis across the handle; and
latching means on said bushing and pivot hole for selectively locking the knife blade at a preselected angular position relative to said transverse axis, said latching means being manually releasable in response to movement of the tang relative to the handle in a preselected direction perpendicular to said transverse axis.

4,604,804

CUTTING DEVICE FOR LIMB WRAPPINGS

Jimmy L. Sparks, Aiken, S.C., assignor to Horse Health Products, Inc., S.C.

Filed Mar. 4, 1985, Ser. No. 707,905
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294 **2 Claims**



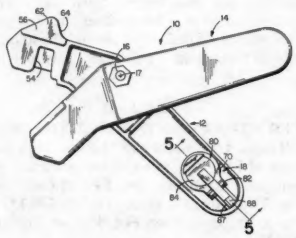
1. A cutting device for removing limb wrappings wherein said device comprises:
a handle including an elongated portion having a elongated axis and an outer end, said elongated portion including top and bottom surfaces projecting from said end and said top surface terminating in a front upper end, and said bottom surface curving upwardly and extending forwardly of said front upper end terminating in a protective lip below and forwardly of said front upper end;
a generally concave biasing surface extending from said protective lip to said front upper end;
a cutting blade having generally parallel sides mounted in said handle within said biasing surface and extending at an angle to said elongated axis from a point inwardly of said protective lip adjacent said front upper end, whereby said protective lip is slightly outward of and elevated above said point of intersection of said blade with said biasing surface to afford protection from said blade; and
said lip portion adapted to enter between said limb and said wrappings at any reasonable angle without cutting injury to said limb and said cutting blade engages said wrappings and upon movement cuts said wrappings with said wrappings on each side of said blade being biased on said biasing surface away from each other to prevent interference with said cutting.

4,604,805

HOLDER FOR DETACHABLE BLADES

George H. Krieger, Creve Coeur, Mo., assignor to John F. Cuscovitch, East Hartford, Conn.

Filed Dec. 14, 1983, Ser. No. 561,165
Int. Cl.[4] B26B *5/00*
U.S. Cl. 30—330 **20 Claims**



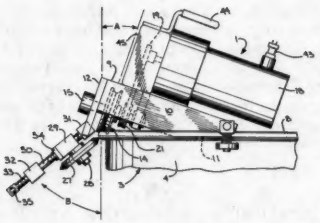
1. In a holder for a detachable blade and having a body including a pair of mating body sections having marginal portions for engagement within a common plane, each of the body sections having a handle portion and a blade retaining portion, pivot means connecting the body sections for pivotal movement about an axis generally normal to the common plane between an open position wherein a blade may be inserted into and removed from the holder and a closed position wherein the blade retaining portions cooperate to define blade retaining means for securing a blade in a cutting position in the holder, and latching means for releasably securing said body sections in closed position, the improvement comprising said blade retaining means including a laterally outwardly facing first clamping surface defined by a marginal portion of the outer peripheral surface of each of said blade retaining portions and a lip carried by each of said blade retaining portions and extending laterally therefrom beyond said common plane and in the direction of the other of said blade retaining portions and defining a laterally inwardly second facing clamping surface, said second clamping surface on each of said blade retaining portions engaging said first clamping surface on the other of said blade retaining portions when said body sections are in said closed position.

4,604,806

POWERED DRUM OPENER WITH CUTTER WHEEL

John F. Pelczynski, Greenfield, Wis., assignor to Hydro-Thermal Corp., Milwaukee, Wis.

Filed Jul. 20, 1984, Ser. No. 633,011
Int. Cl.[4] B23D *21/04*
U.S. Cl. 30—417 **8 Claims**



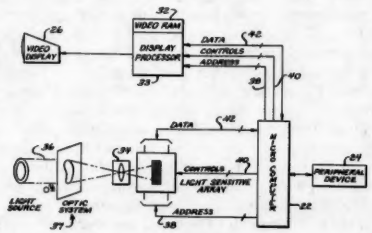
1. A drum opener for removing a cover from a platic lined drum, said drum including a cylindrical metal wall having a plastic liner on the inner surface of said wall, the upper edge of said wall and said liner being rolled outwardly with the peripheral edge of the cover to form a chime, and said drum including a metal clamping band clamped around the chime and extending completely around the circumference of the drum, said opener comprising a supporting structure, power means mounted on the supporting structure, rotatable drive means journaled on the supporting structure and disposed to engage the upper portion of said clamping band, means operably connecting said power means to said drive means to thereby rotate said drive means and move said opener in a path around the periphery of the drum, a rotatable cutter disposed in engagement with the lower portion of said band and disposed on the opposite side of a vertical plane extending through said drive means from said power means, said cutter being disposed out of direct alignment with said drive means, a pair of arms extending outwardly in opposite direction from the supporting structure, and guide means on the end portion of each arm and spaced circumferentially from said drive means, said guide means disposed to ride on said chime as the opener is moved in its path of travel.

4,604,807

ELECTRONIC FOOT MEASURING APPARATUS AND METHOD

Harry S. Bock, Inverness; Stanley O. Gregory, Elgin; F. Philip Gardner, McHenry, and Russell H. Reid, Bolingbrook, all of Ill., assignors to Interco, Incorporated, St. Louis, Mo.

Continuation-in-part of Ser. No. 685,137, Dec. 21, 1984, Pat. No. 4,538,353. This application Aug. 30, 1985, Ser. No. 770,966
Int. Cl.[4] A43D *1/00*
U.S. Cl. 33—3 C **15 Claims**



1. Apparatus for measurement of foot size comprising light sensitive array means comprising plural individual light sensitive elements,

means for imaging the foot to be measured upon said light sensitive array means to thereby effect the storage of electrical energy in individual ones of said plural light sensitive elements,

microprocessor means connected at an output thereof through address select logic means to an input of said light sensitive array means to direct the sequential reading of the output of said individual light sensitive elements thereof,

video display means for displaying the image of said foot in response to the output of said light sensitive array means, and

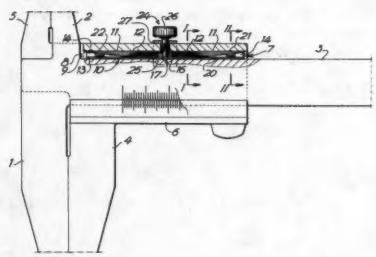
data bus means for transmitting said output of said light sensitive array means to said microprocessor means and said video display means.

4,604,808

INSTRUMENT FOR MEASURING LINEAR MAGNITUDES

Jean-Pierre Jeannet, Lausanne; Eric Zumbrunnen, Lutry, and Roberto Cartisano, Renens, all of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed Apr. 22, 1985, Ser. No. 726,333
Claims priority, application Switzerland, Apr. 26, 1984, 2047/84
Int. Cl.[4] G01B *5/02*
U.S. Cl. 33—143 M **5 Claims**



1. An instrument for measuring linear magnitudes comprising at least a first feeler which is rigidly connected to a linear slideblock, at least one second feeler of a slider mounted for sliding on the slideblock and at least one play take-up device connected to the slider and inserted between an inner resting face (**8**) of the latter and a corresponding outer resting face (**9**) of the slideblock in a space of rectangular cross section, characterized by the fact that the play take-up device comprises a base plate (**10**) having a flat sliding face (**13**) over which there are two symmetrical end inclined resting planes (**14**) of the same slope, two shoes (**11**) with inclined resting planes (**20**) of the same slope as those of the base plate and arranged resting respectively against the latter and with flat sliding faces (**21**) parallel to the flat face of the base plate, and at least one elastic compression member (**12**) arranged resting tangentiallyagainst each of the two shoes so as to cause the latter to ascend along the two symmetric inclined planes of the base plate.

4,604,809

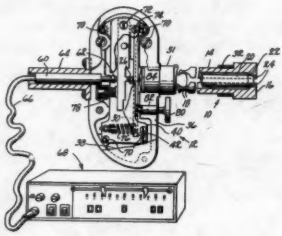
GAGE HEAD ACTUATING COUPLER

Franklin Meyer, Jr., P.O. Box 1, Forestdale, R.I. 02024

Filed Apr. 5, 1985, Ser. No. 720,088
Int. Cl.[4] G01B *5/12, 7/12*
U.S. Cl. 33—178 E **5 Claims**

1. An actuator for an expanding and contracting gage head operated by an axially movable plunger having a tapered operating end and a cross head at the other end, comprising a case,

a retracting lever, a transducer coupling lever, a supporting structure fixedly secured within the case providing pivots for the levers, the side of the retracting lever remote from the gage head being in engagement with the cross head, means for mounting said gage head and defining an axis for the case, a



contact surface on the coupling lever for the other end of the plunger, a transducer defining on axis fixed to the case in alignment with said axis of the case and being in engagement with said coupling lever, and means for actuating the retracting lever for withdrawing the plunger in a direction away from the gage head.

4,604,810

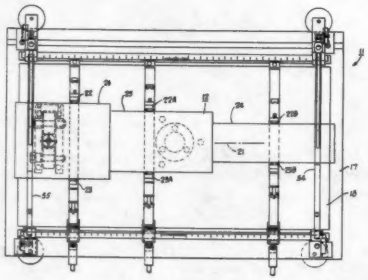
POST PROCESS DIAMETER GAGE

Nagle V. Gusching, Sidney, and Richard R. Daulton, Cincinnati, both of Ohio, assignors to The Monarch Machine Tool Company, Sidney, Ohio

Filed Aug. 29, 1985, Ser. No. 770,709

Int. Cl.[4] G01B 7/12

U.S. Cl. 33—178 E **14 Claims**



1. A post process diameter gate for a workpiece with multiple portions of different diameters comprising in combination:

a gage platform;

drive means to relatively move said gage platform and a multiple diameter workpiece relative to each other in a plane through the workpiece centerline;

at least two sets of first and second gage blocks;

first means mounting said first gage block of each set on said gage platform for limited lateral movement relative to said centerline plane;

second means mounting said second gage block of each set on said gage platform for limited lateral movement relative to said centerline plane with the two gage blocks of each set on opposite sides of a diameter of the workpiece;

said at least two sets of first and second gage blocks being mounted on said gage platform at different longitudinal positions to gage portions of different diameters on the workpiece;

spring means connected to relatively urge said first and second gage blocks of each set toward the workpiece centerline;

an electrical output gage connected to be moved in accordance with relative movement between said first and second gage blocks of each set;

means adapted to connect said electrical output gages to a numerical control of the machine tool machining successive workpieces; and

said drive means being controllable to relatively advance said gage platform and a workpiece to a position whereat said sets of gage blocks are urged by said spring means to contact opposite sides of plural diameters of a workpiece machined by the numerically controlled machine tool to gage at least two different diameter portions of the workpiece to correct the cutting diameters of the machine tool in accordance with variation from desired dimensions of the workpiece.

4,604,811

HOLDING UNIT FOR MOUNTING AND ALIGNING PRINTING PLATES

Reiner Roosen, Von-Eiff-Strasse 23, D-6450 Hanau/Main 7, Fed. Rep. of Germany

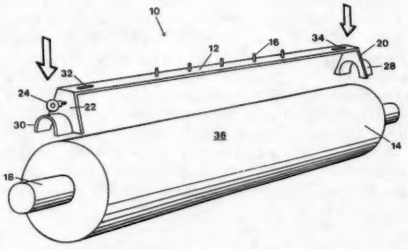
PCT No. PCT/EP84/00089, § 371 Date Feb. 11, 1985, § 102(e) Date Feb. 11, 1985, PCT Pub. No. WO84/04900, PCT Pub. Date Dec. 20, 1984

PCT Filed Mar. 29, 1984, Ser. No. 700,770

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 8317151[U]

Int. Cl.[4] B41B 1/00

U.S. Cl. 33—184.5 **6 Claims**



1. A holding unit for mounting and aligning printing plates on the printing cylinder of a printing machine, said cylinder having a longitudinal axis, opposed end faces and a coaxial shaft with opposed coaxial shaft end portions projecting beyond the end faces; said holding unit comprising a straight rail adapted to parallel said cylinder in overlying relation thereto, said rail having opposed end portions, a pair of end sections engaged with said opposed end portions of said rail and extending generally laterally therefrom for overlying said end faces, said end sections each including a shaft-engaging structure configured to receive the corresponding shaft end portion, to self-center on the corresponding shaft end portion upon the shaft end portion being fully received therein, thereby positioning the rail of the holding unit parallel to the longitudinal axis of the cylinder, said rail including releasable plate securing means therealong for selective retention of printing plates on said rail for alignment on a cylinder, said releasable plate securing means being adapted to cooperate with complementary means on the plates to be mounted, said plate securing means and said complementary means comprising interengaging projections and recesses, said shaft-engaging structure of each end section comprising a pair of opposed members positionable to opposite sides of the corresponding shaft end portion, at least one of said members being mounted for movement, relative to the other member, toward and away from the corresponding

shaft end portion for engagement and enclosure of the corresponding shaft end portion therebetween.

4,604,812

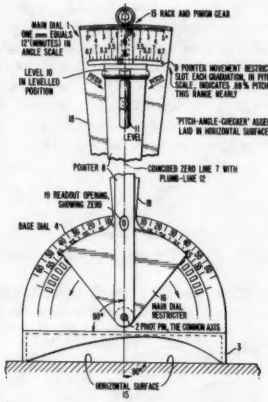
PITCH-ANGLE-CHECKER (P-A-C)

Jahanbakhsh Arjomand, P.O. Box 4372, San Juan, P.R. 00905

Filed Mar. 1, 1985, Ser. No. 707,409

Int. Cl.[4] G01B *5/24*; G01C *9/28*

U.S. Cl. 33—387 **15 Claims**


MAIN DIAL 1
ONE mm EQUALS 12 MINUTES IN ANGLE SCALE
15 RACK AND PINION GEAR
9 POINTER MOVEMENT RESTRICTER
SLOT EACH GRADUATION, IN PITCH SCALE, INDICATES .05 % PITCH IN THIS RANGE NEARLY
LEVEL 10 IN LEVELLED POSITION
'PITCH-ANGLE-CHECKER' ASSEMBLY LAID IN HORIZONTAL SURFACE
LEVEL
POINTER 8
CONCIDED ZERO LINE 7 WITH PLUMB-LINE 12
16 READOUT OPENING, SHOWING ZERO
BASE DIAL 4
MAIN DIAL RESTRICTER
2 PIVOT PIN, THE COMMON AXIS
HORIZONTAL SURFACE 15

1. A pitch and angle measuring instrument comprising:

a base including means for resting said base on an item and an upper portion extending upward from said means, said upper portion having a first calibrated scale thereon;

a main dial member rotatably affixed to said base and extending upward therefrom, said main dial member having a second calibrated scale thereon; and

an elongated pointer rotatably connected to said base about the same pivot point as said main dial member, said pointer including a level indicator;

wherein said first and said second calibrated scales are arcuate having the same center point, the radius of the arc of the second scale being greater than the radius of the arc of the first scale, said second calibrated scale being of less arcuate length then said first calibrated scale, said second scale being graduated in smaller units than said first scale;

said pointer including means for indicating a number on both of said scales when the level indicator is at a level position.

4,604,813

APPARATUS FOR DIMENSIONAL INSPECTION OF A PIPE SPOOL, OR FOR MAKING OR CUTTING AND FINISHING AT ITS BOTH ENDS

Shumpei Kawanami, Hiratsuka, and Hiroshi Nakama, Yokohama, both of Japan, assignors to Dai-Ichi High Frequency Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1985, Ser. No. 703,545

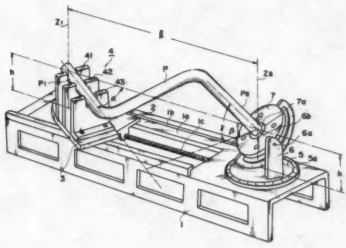
Int. Cl.[4] A61B *5/08*

U.S. Cl. 33—529 **12 Claims**

1. Apparatus for dimensional inspection of a pipe spool or for marking, or cutting and finishing at its both ends comprising a

base frame, which is long enough to cover the diagonal length of a pipe spool to be inspected, on which a substantially horizontal base plane as the reference for a coordinate system exists, said base frame having first and second rotary tables, said first table being rotatable around an axis vertical to said horizontal base plane, said second table being mounted on a slide table slidable relative to said first rotary table,

a first horizontal pipe end support mounted on the rotary tables so that its horizontal axis intersects the vertical axis of said rotary table at a determined proper effective height, and



a second pipe end support mounted on a swing table swingable around an axis which is supported and fixed on another rotary table so as to let three axes, that is axis of the pipe end support, axis of the swing table and axis of the rotary table, intersect each other at a point at the same height with that of said horizontal pipe end support.

4,604,814

APPARATUS FOR COOLING OR DRYING COARSE-GRAINED BULK MATERIAL

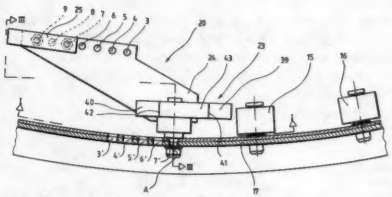
Alfred Klöckner, Hirtscheider Str. 11, D-5239 Nistertal, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,969

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311693; European Pat. Off., Mar. 20, 1984, 84103053.9

Int. Cl.[4] F26B *17/00, 17/12*

U.S. Cl. 34—172 **16 Claims**



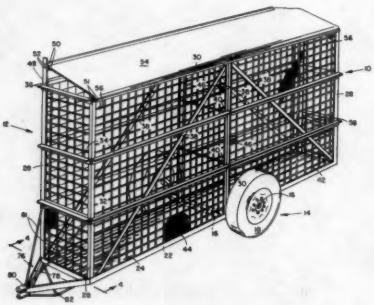
1. Apparatus for cooling or drying of coarse-grained bulk material, comprising a plurality of substantially planar trays mounted one above another for rotation in one direction about a common axis, each tray being divided into a plurality of segments adapted to be tilted about a tilt axis extending in a radial direction of said common axis, means supporting said segments along a path in the plane of the respective tray and permitting said segments to be tilted only within an angular range of said rotation, said means including in association with each tray a tilt lever mounted for pivoting movement about a stationary tilt axis for tilting any one segment within said angular range, said tilt lever having a first lever arm projecting into the path of said segment support means, and a second lever arm adapted on pivoting said first lever arm to engage a respective segment for forcibly tilting it about its tilt axis, characterized in that said first lever arm (**25, 24**) of said tilt lever (**20**) is adjustable in the direction of rotation of said trays (**10**) relative to said second lever arm (**23, 39**).

4,604,815

TRAILER FOR STORING AND DRYING HARVESTED CROPS

Steve H. Ridgway, Rte. 1, Box 44R, Pleasanton, Tex. 78064

Filed Sep. 6, 1984, Ser. No. 647,747
Int. Cl.[4] F26B *9/02*
U.S. Cl. 34—201 **10 Claims**



1. A trailer for storing and/or drying harvested crops, such as peanuts, comprising:

at least one front truck axle having tires on each end thereof;

a frame attached to a lower portion of said front truck axle, said frame being formed to give a long narrow deep rectangular box with smooth inner walls;

cattle panel wire having a first mesh size attached to said smooth inner walls;

hardware cloth overlapping said cattle panel wire and attached thereto, said hardware cloth having sufficient strength to hold said crops inside said trailer and a second mesh size, said second mesh size being smaller than said first mesh and being small enough to prevent said crops from spilling therethrough from said trailer, said cattle panel wire being of sufficient strength to support said hardware cloth;

at least two corner posts on one side of said frame extending above said trailer for supporting a cover thereon, said cover being extendable over said trailer;

hitch means attached at a lower front of said trailer;

gate means releasably secured at a lower rear of said trailer, said gate means also being covered with said cattle panel wire and said hardware cloth; and

floor means with holes therein for allowing moisture and sand out and air in;

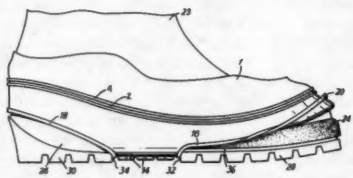
width of said trailer being between 30" and 48".

4,604,816

GAITER RANDS

George G. Davison, 24 Low Gosforth Court, Melton Park, Newcastle upon Tyne 3, England

Filed Jun. 4, 1984, Ser. No. 616,726
Claims priority, application Italy, Jun. 9, 1983, 85578 A/83
Int. Cl.[4] A43B *3/16*
U.S. Cl. 36—1.5 **10 Claims**



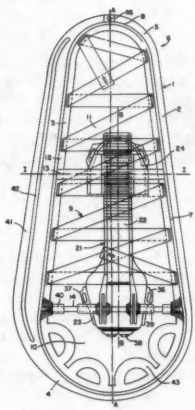
1. A rand for a gaiter to be applied to a boot, the boot having a sole and a heel, the sole including an upstanding sidewall and the gaiter including a flexible upper portion, the rand being of elastic material and having a periphery adapted for connection to the flexible upper portion of the gaiter, the rand defining therein an aperture across which extends an instep strap defining front and rear openings the shapes of which conform substantially with those of the sole and heel respectively of the boot but the dimensions of which are less than the corresponding external dimensions of said sole and heel, at least the toe portion of the upstanding sidewall of the sole of the boot having a groove formed therearound and a rib being formed on the inside surface of the rand around at least the front extent of the boundary of the front opening, the arrangement being such that, on positioning of the rand on the boot, the boundaries of the front and rear openings are stretched such that the rib around the front opening is located in the groove formed in the sidewall of the sole of the boot to make sealing contact therewith and the rear opening extends around the heel of the boot to make sealing contact therewith, the instep strap extending across the base of the boot between the sole and the heel thereof.

4,604,817

SNOWSHOE

Gérard Ramboz, Rue Allamand, 74490 Saint Jeoire en Faucigny, France

Filed Feb. 27, 1985, Ser. No. 706,092
Claims priority, application France, Feb. 29, 1984, 84 03247
Int. Cl.[4] A63C *13/00;* **A43B** *5/04*
U.S. Cl. 36—125 **13 Claims**



1. A snowshoe or racket, comprising a rigid generally flat frame formed from an inner side member and an outer side member joined together by a front end cross piece and a rear end cross piece, the frame having fixed thereto a central lattice forming a perforated bearing surface having a toe passage, said frame receiving a transverse pivot pin, disposed at the end of the toe passage, the two ends of said pin being housed in the side members and its intermediate part supporting a pivoting structure provided with fastening means for receivng and fastening the shoe of the user, wherein:

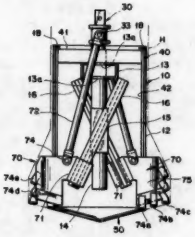
said side members each have identical cross setions, a fin portion extending outwardly from said identical cross sections only along a portion of said outer side member, said fin portion providing a sliding bearing surface; and

the pivoting structure comprises a base plate having a front stirrup-piece and a rear heelpiece for holding respectively the front and the rear of the shoe, fastening means allowing the shoe to be fastened to said structure.

4,604,818
UNDER REAMING PILE BORE EXCAVATING BUCKET AND METHOD OF ITS EXCAVATION

Hachiro Inoue, Ichikawa, Japan, assignor to Kabushiki Kaisha Tokyo Seisakusho, Urayasu, Japan

Filed Jul. 24, 1985, Ser. No. 758,329
Claims priority, application Japan, Aug. 6, 1984, 59-164393; May 31, 1985, 60-118191; Jun. 1, 1985, 60-83076[U]
Int. Cl.[4] E02E *1/00;* E01H *13/04*
U.S. Cl. 37—195 16 Claims



1. A method of excavating an under reamed part of a pile bore with an excavating bucket having a bucket body with side apertures, an openable bucket bottom plate with openable bottom apertures, a drive shaft, a bucket cover, and wing bits slidably movable by the drive shaft along guide rails downwardly and outwardly when the drive shaft is rotated in a forward direction, which comprises the following steps of:

(a) excavating a straight pile bore;

(b) lowering the excavating bucket to a bottom of the straight pile bore;

(c) closing the bucket bottom plate when the bucket reaches the bottom of the straight pile bore;

(d) rotating the drive shaft in the forward direction to first open the side apertures and then to drive the wing drill bits together with the bucket body in such a way that the rotated wing drill bits move downward and extend outward along the guide rails passing through the opened side apertures to excavate the under reamed part of the pile bore, while taking excavated soil into the bucket body through the side apertures of the bucket body and the openable bottom apertures of the bucket bottom plate;

(e) if the wing drill bits reach their lowermost position, rotating the drive shaft in the reverse direction to move the wing drill bits upward and contract inward along the guide rails passing through the opened side apertures to house again the drill bits within the bucket body while moving excavated soil to under the bucket body and taking the moved soil into the bucket body through the openable bottom apertures;

(f) closing the side apertures by the bucket cover;

(g) raising the excavating bucket onto the round; and

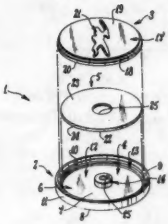
(h) opening the openable bucket bottom plate to discharge the excavated soil within the bucket body to the outside.

4,604,819
IMITATION MEDAL

George E. Grey, Mount Dandenong, Australia, assignor to Craigave Pty. Ltd., Mt. Dandenong, Australia

Filed Aug. 10, 1984, Ser. No. 639,447
Claims priority, application Australia, Aug. 23, 1983, PG0984
Int. Cl.[4] A44C *3/00*
U.S. Cl. 40—1.5 11 Claims

1. A medal, including: a pair of casing parts composed of plastic material and assembled together to give an appearance of a unitary medal having a pair of spaced apart outer faces at least one of which is decorated, the casing parts frictionally interengaging each other so as to be assembled together by friction fit, the assembled casing parts defining an internal cavity therebetween; one of the casing parts having a location post projecting into the internal cavity; and, a weighted member located within the cavity to give the medal an appreciable weight, the weighted member having an aperture therein through which the location post closely extends so as to assist

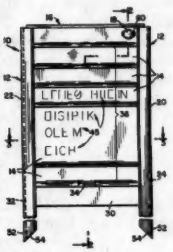


positive location of the weighted member within the cavity, and the weighted member being shaped and sized so as to be sandwiched between the friction fitted casing parts and thereby be securely held against rattling within the cavity solely by the casing parts.

4,604,820
MODULAR SIGN

David C. Edman, Camp Hill, Pa., assignor to Build-A-Sign, Inc., Mechanicsburg, Pa.

Filed Jan. 23, 1985, Ser. No. 693,976
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—605 11 Claims



1. A modular sign including a rectangular frame having opposed vertical channel members with upper and lower ends defining a pair of inwardly facing channels, a top rail extending between the upper ends of the channel members and a bottom rail extending between the lower ends of the channel members, and panel member retention means on the bottom rail; an essentially flat assembly of panel members including a top panel member and a bottom panel member, each panel member including an elongate flat central panel having a pair of opposed display surfaces, a top locking element on the top of the central panel and a bottom locking element on the bottom of the central panel, said panel members extending from side to side across the width of the assembly with the top and bottom locking elements of adjacent panel members removably interlocked to secure the panel members together in the assembly; and an elongate top member including a roof, a body extending downwardly from the roof and a locking element on the bottom of the body; said assembly being confined within the interior of the frame with the ends of the panel members extending into the channels in the channel members, the bottom locking element of the bottom panel member extending past the bottom rail panel member retention means to retain the rail and bottom panel member together; the top member body

extending along said top rail with the roof overlying the top rail and the top member body extending downwardly from the roof to one side of the rail, the ends of the body extending into the channels in the channel members adjacent the rail and the top member locking element removably interlocked with the top locking element of the top panel member of said assembly whereby the assembly and top member are removably confined within the frame.

4,604,821

FLY FISHING JUNCTION LEADER

Roman Moser, Kuferzeile 19, 4810 Gmunden, Austria

Filed Sep. 12, 1983, Ser. No. 531,072
Int. Cl.[4] A01K *91/00*
U.S. Cl. 43—44.98 **4 Claims**

1. A junction leader for a fly line comprising:

a hollow braided tube formed by a plurality of braided filaments, said tube having open opposite ends one of which is large enough to receive the fly line therein and said tube constricting upon elongation to permit constriction of the tube on the fly line inserted into said one end thereof; and

a leader line tapering from a butt end thereof to a distal end adapted for attachment to a fly, said butt end being received in the end of the tube opposite said one end and being glued in place therein, said leader line comprising:

a first monofilament tapering from said butt end toward said distal end;

a second monofilament shorter than said first monofilament and substantially uniform in cross section; and

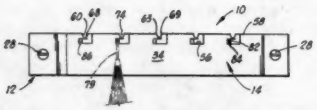
a third monofilament shorter than said first monofilament and tapering from said butt end toward said distal end said monofilaments all being braided together to form the leader line.

4,604,822

FISHING LURE HOLDER

S. Kent Christenberry, 200 NE. 46th St., Oklahoma City, Okla. 73105

Filed Jun. 24, 1985, Ser. No. 748,210
Int. Cl.[4] A01K *97/06*
U.S. Cl. 43—57.1 **16 Claims**



15. In a fishing lure holder of a type having a pair of longitudinally extending portions, one of said portions defining a transversely extending L-shaped slot therein and the other of said portions defining a transversely extending U-shaped slot therein, one of said portions being movable so that said slots are positionable for locking a hook of a fishing lure therebetween, the improvement comprising:

a first surface interconnecting an apex of said L-shaped slot and a longitudinal edge of the corresponding longitudinally extending portion;

a second surface interconnecting an intermediate portion of said U-shaped slot with a longitudinal edge of the other longitudinally extending portion, such that said first and second surfaces define a hook-receiving groove extending normally with respect to said longitudinally extending portions adjacent said longitudinal edges; and

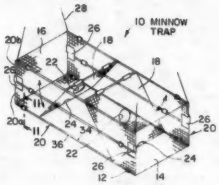
biasing means for biasing said movable portion toward a hook locking position, such that as a hook is moved transversely in said groove, said movable portion is moved toward an open position in which said hook may be moved past an apex of said L-shaped slot, whereupon said biasing means will return said movable portion to said locking position.

4,604,823

MINNOW TRAP

Charles Ponzo, 37 Abby La., Shirley, N.Y. 11967

Filed Jul. 16, 1984, Ser. No. 631,333
Int. Cl.[4] A01K *69/10*
U.S. Cl. 43—105 **13 Claims**



1. A minnow trap, comprising in combination:

(a) a frame, shaped like a rectangular parallelepiped covered on the top and bottom and two sides with mesh but having open ends whereby small fish may swim into either of said ends but are prevented from exiting said top or said bottom or said sides due to the separation of the strands of said mesh;

(b) two rectangular frames, covered with mesh wherein each of said rectangular mesh covered frames are suspended from said top to said bottom of said rectangular parallelepiped mesh covered frame slanting toward each other and located at a distance inward from said open ends of said rectangular parallelepiped mesh covered frame to provide a cove for said small fish; further comprising an aperture in the center of each of said rectangular mesh covered frames whereby small fish may enter through either of said apertures but are trapped in the open space between said rectangular mesh covered frames and the interior of said rectangular parallelepiped shaped mesh covered frame; and,

(c) means for collapsing said minnow trap.

4,604,824

LILY PRODUCTS

J. Robert Oglevee; James F. Tammen, both of Connellsville, and Wendy O. O'Donovan, Scottdale, all of Pa., assignors to Oglevee Associates, Inc., Connellsville, Pa.

Division of Ser. No. 559,035, Dec. 7, 1983, Pat. No. 4,570,379.
This application Sep. 18, 1985, Ser. No. 777,635
Int. Cl.[4] A01H *3/00*
U.S. Cl. 47—1 A **1 Claim**

1. A *Lilium longiflorum* bulb having a size on the order of two to two and one-half inches and adapted to produce a *Lilium longiflorum* plant when subjected to a method of growing *Lilium longiflorum* comprising:

A. propagating from a substantially pathogen-free lily plant by removing a portion of the plant;

B. growing the portion in a growing media for about ten weeks to form bulblets on the order of 0.6 to 1.2 inches in circumference;

C. digging, grading and cleaning the bulblets;

D. immediately planting the bulblet in a small pot in a greenhouse under aseptic conditions;

E. growing the bulblet under short-day conditions to pre-

vent flowering and establish foliage and roots for about ten weeks to form a young plant;

F. transplanting the young plant to a larger pot and further growing the young plant under short-day conditions for about fourteen weeks to form a plant having on the order of forty to fifty leaves rosette in form and an extensive root system;

G. growing the plant under long-day conditions for about two weeks to initiate flowers; and

H. growing the plant under natural lighting for up to about three months to a plant of about eighteen to twenty-four inches including the pot with about four to six flowers and about eighty to ninety leaves.

4,604,825

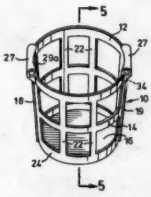
TREE CRADLE

Walter H. Mainprice, R.R. #1, Sunderland, Ontario, Canada (L0C 1H0)

Filed Jan. 22, 1985, Ser. No. 692,991

Int. Cl.[4] A01G *23/04*

U.S. Cl. 47—76 **6 Claims**



1. A cradle for use in transplanting and transporting trees, comprising:

a body having an upper rim member in the shape of a closed loop, two main strap members integral with said rim member at opposed locations thereon and extending downwardly therefrom to terminate at bottom edges,

a bottom wall disposed between said bottom edges and integral therewith,

auxiliary strap members extending between the bottom wall and the upper rim member,

a handle at the top of each main strap member and integral therewith, each handle defining an open ended sleeve parallel with the bottom wall, whereby carrying poles can be inserted through the handles to facilitate manipulation of the cradle, each handle being disposed to the outside of its respective main strap member, the cradle further including reinforcement web means between each handle and its respective main strap member.

4,604,826

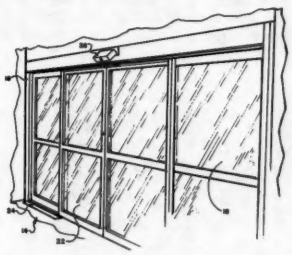
AUTOMATIC SLIDING DOOR OPERATOR

Robert Sorber, Charlotte, N.C., assignor to Keane Monroe Corporation, Monroe, N.C.

Filed Oct. 30, 1984, Ser. No. 666,507

Int. Cl.[4] E05F *15/20*

U.S. Cl. 49—31 **5 Claims**



1. In an automatic door control system of the type comprising a frame in which a door is slidably supported for opening and closing movement, driving means for driving said opening and closing movements of said doors, and control means for controlling actuation and de-actuation of said driving means and operative upon each said actuation to cause said door to be moved to provide an opening of a predetermined width, the improvement comprising means operatively associated with said control means for regulating the width of said door opening in relation to the frequency of actuation of said driving means, said regulating means including timing means for determining at any given time whether or not the elapsed time since the last previous cycle of door opening and closing actuation of said driving means is greater or less than a predetermined time value, said timing means being operative on said control means upon each door opening actuation of said driving means for stopping movement of said door beyond a reduced opening of less than said predetermined width when said elapsed time is greater than said predetermined time value and for permitting movement of said door fully to said opening of said predetermined width when said elapsed time is less than said predetermined time value, said regulating means comprising logic circuit means electrically connected with said control means to receive an electrical input signal therefrom upon each said door opening actuation of said driving means, said logic circuit means being arranged to provide different return signals to said control means respectively when said elapsed time is less than and greater than said predetermined time value, said logic circuit means being operatively associated with said control means to cause it to terminate prematurely door opening actuation of said driving means in response to a disenabling one of the return signals representing that said elapsed time exceeds said predetermined time value and to have no altering effect upon door opening actuation of said driving means in response to an enabling one of said return signals representing that said elapsed time is less than said predetermined time value.

4,604,827

HINGED WINDOW-GUARD ASSEMBLY

William G. Hitchins, "Fiddawn", New Cascade Road, Australia, Norfolk Island (2899)

Filed Jul. 23, 1985, Ser. No. 758,083

Claims priority, application Australia, Jun. 11, 1985, PH0983

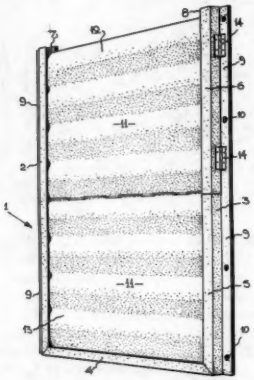
Int. Cl.[4] E06B *3/68*

U.S. Cl. 49—57 **5 Claims**

1. A window guard assembly comprising a frame element

adapted to be affixed to, and to extend about, three sides of a surround of a window opening, and a shutter element receivable in said frame element;

said frame element consisting of three sub-elements each of channel-shaped cross section and having their appropriate respective ends joinable so as to constitute three sides of a rectangle, two of which are adapted to extend vertically adjacent the sides of said window opening and the other of which is adapted to extend horizontally adjacent the lower sill of said window opening, the mouths of the said three channel-shaped sub-elements facing inwardly to thereby define a continuous inwardly-opening channel about the three sides of said window opening; one of said vertically-extending sub-elements being formed in two



vertically-juxtaposed portions, the upper one of which is side-hinged so as to be able to be swung outwardly; said shutter element being composed of at least two portions of horizontally-corrugated cross-section, an upper horizontal edge of each portion except tthe topmost one being formed so as to be able to receive therein a plane edge of an adjacent portion; said shutter element being dimensioned so as to be able to be held sungly, by its lower and side marginal portions, within the said continuous channel when the said hinged upper portion is in the closed position; the arrangement being such that, by virtue of the said hinged upper portion, said shutter element is slidable sideways into said frame element when the lintel of the window closely approaches an eave-line or soffit.

4,604,828

SAFETY DEVICE, IN PARTICULAR FOR AN OVERHEAD DOOR

Dick Baarse, Aalsmeer, Netherlands, assignor to Saturn Limited, Colchester, Great Britain

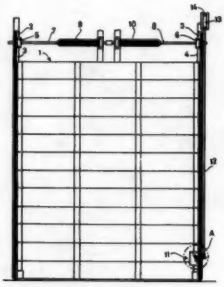
Filed Mar. 4, 1985, Ser. No. 707,909

Claims priority, application Netherlands, Mar. 2, 1984, 8400692

Int. Cl.[4] E05D *13/00*

U.S. Cl. 49—322 **4 Claims**

1. Safety device, in particular for an overhead door, comprising fastening means for blocking the door, which means is operated by an auxiliary cable under tension, which is connected on the one hand to the door and on the other hand to a reel provided with a speed-limiting means, the latter blocking the reel and hence the auxiliary cable when the door exceeds a predetermined rate of descent and the fastening means becomes operative, the auxiliary cable being provided with a breaking element which breaks when the reel is blocked, while the fastening means is under pressure and becomes operative when the tension in the auxiliary cable is removed, a lever-shaped locking lever is fastened rotatably to the door, the lever being connected on the one hand to the auxiliary cable and on the other hand acting upon the fastening means, and the locking lever being capable of holding the fastening means under spring pressure in a non-operative position as a result of the tension in the auxiliary cable, the fastening means is defined by



a bar, which is movably connected to the door so as to engage with one of its outer ends into one of openings in a post attached beside the door, the bar being under pressure from a spring which seeks to press the bar into engagement with the post and being provided with a projecting cam which cooperates with the locking lever.

4,604,829

DOOR WINDOW REGULATOR

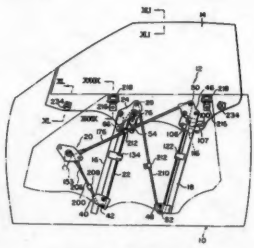
Daiichi Shiraishi; Eiji Iwasaki, and Ryoichi Fukumoto, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiki Co., Ltd., both of, Japan

Filed Jun. 5, 1985, Ser. No. 741,442

Claims priority, application Japan, Jun. 6, 1984, 59-83801[U]; Jun. 6, 1984, 59-83802[U]; Jun. 6, 1984, 59-83803[U]

Int. Cl.[4] E05F *11/48*

U.S. Cl. 49—352 **32 Claims**



1. A door window regulator which vertically moves and guides a door window glass of a vehicle, said regulator comprising:

(a) a pair of parallel guide members secured to a door;

(b) sliders secured to the lower portion of said door window glass and respectively guided by said guide members;

(c) upper and lower pulleys rotatably supported at the upper and lower portions, respectively, of each of said guide members;

(d) a wire stretched between said upper and lower pulleys on each of said guide members and connected to the lower portion of said door window glass at a portion of said wire between said upper and lower pulleys on each of said guide members, said wire being further stretched between said upper pulley on one of said guide members and said

lower pulley on the other guide member and between said lower pulley on said one guide member and said upper pulley on said other guide member so that said wire forms a closed loop;

(e) a driving unit adapted to actuate a portion of said closed loop wire; and

(f) wire tubes respectively interconnecting said driving unit and each of said guide members and interconnecting said guide members, thereby guiding said wire.

4,604,830

FLUSH-SURFACED AUTOMOBILE DOOR ASSEMBLY

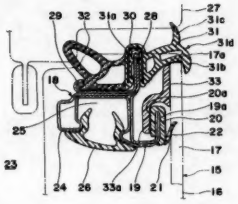
Tatsuo Maeda, and Takeshi Konishi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 25, 1985, Ser. No. 694,817

Claims priority, application Japan, Jan. 31, 1984, 59-12929[U]; Jan. 31, 1984, 59-12930[U]

Int. Cl.⁴ E05F *11/38*

U.S. Cl. 49—374 **9 Claims**



1. A door assembly for an automobile having a door body, which comprises:

a window pane adapted to be raised from and lowered into the door body;

a window sash mounted on the top of the door body and positioned generally inwardly of the window pane with respect to the interior of the automobile, said window sash including an inner peripheral flange of generally U-shaped cross section opening in a direct towards and outwardly of a pheripheral edge of the window pane and an outer peripheral fange positioned exteriorly with respect to said inner peripheral flange, said outer peripheral flange carrying a sealing member for sealing a gap between a peripheral edge of the window pane and the window sash; and

a plurality of guide blocks secured to the window pane, each of said plurality of guide blocks having a finger portion slidingly protruding into the U-sectioned space in the inner peripheral flange for guiding the window pane during the raising and lowering thereof from and into the door body.

4,604,831

REDUCTION OF DRAUGHTS THROUGH SLIDING SASH WINDOWS

Robert W. Tunnicliffe, Harrogate, and John M. H. Leighton, Thirsk, both of England, assignors to Ventrolla Limited, North Yorkshire, England

Filed Apr. 13, 1984, Ser. No. 600,329

Claims priority, application United Kingdom, Apr. 15, 1983, 8310299

Int. Cl.⁴ E05D *15/16*

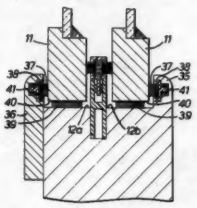
U.S. Cl. 49—434 **6 Claims**

1. A method of reducing draughts through sliding sash windows in which wooden leaves slides in respective side-by-side portions of a wooden frame opening, the portions being separated by a parting bead carried in a slot extending around the frame and lying in a plane parallel to the plan of the leaves, the method comprising:

removing the parting bead to leave said slot,

securing in said slot, an H-shaped base edge strip including means defining a groove,

inserting a seal carrying strip into said means defining a groove, said seal carrying strip defining two oppositely facing channels,



and introducing respective pile weatherstrips into said oppositely facing channels, so that each pile weatherstrip seals against a respective leaf to reduce draughts past the leaves.

4,604,832

EDGE GUARD

Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Continuation of Ser. No. 617,766, Jun. 6, 1984, Pat. No. 4,565,032. This application Oct. 4, 1985, Ser. No. 784,920

Int. Cl.⁴ B60J *5/00*

U.S. Cl. 49—462 **12 Claims**

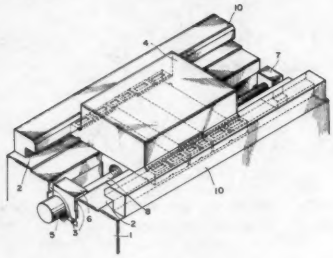
9. In an ornamental and protective edge guard of generally channel-shaped cross section comprising inner and outer legs via which the edge guard is self-retaining on the edge of a sheet metal panel of a vehicle body when the edge guard is installed thereon, the edge guard comprising a metal strip formed to a generally channel-shaped cross section with the sides of the channel constituting the legs of the edge guard, and an insulating layer secured to the metal strip, the improvement comprising a bead at the distal end of one leg comprising a double thickness fold of the metal strip folded back onto the one leg so that there are three thicknesses of metal at the distal end of the one leg and said bead also comprising at least two thicknesses of said insulating layer wherein the two thicknesses of insulating layer are not in surface-to-surface confrontation with each other but wherein one of the two thicknesses of insulating layer is disposed on the distal end of the leg so as to insulate the metal of the strip from that of the sheet metal panel, and in which said insulating material is selectively disposed on both sides of the metal strip which become the major portions of the exterior and interior of the channel-shaped cross section and covers the entirety of each of said sides.

4,604,833

TABLE MECHANISM

Sosaku Kimura, Nerima; Takeshi Okabe, Hino, and Toshikazu Hatsuse, Tanashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1985, Ser. No. 807,311
Claims priority, application Japan, Jul. 2, 1985, 60-145113
Int. Cl.[4] B24B *41/06*
U.S. Cl. 51—165.8 **3 Claims**



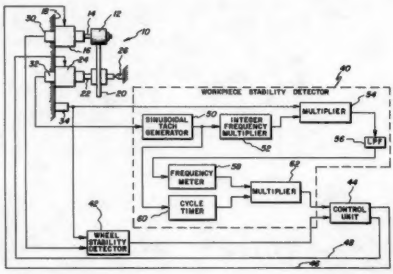
1. A table mechanism comprising:
(1) a bed;
(2) a horizontal guide and a vertical guide of said bed or formed on said bed;
(3) a pair of supports fixed to said bed;
(4) a motor fixed to one of said pair of supports;
(5) a feed screw supported rotatably by said supports, connected to said motor and adapted to be turned by said motor;
(6) a first table including nuts for screwing onto said feed screw and having a lower extension engagedly guided by said vertical guide and horizontal extensions engagedly guided by said horizontal guide, said first table moving straight through said nuts screwed onto said feed screw connected to said motor and adapted to be turned by said motor;
(7) a second table having lower extensions engagedly guided by said vertical guide and horizontal extensions engagedly guided by said horizontal guide;
(8) wherein, of the opposite surfaces between the lower extension of the first table and each of the lower extensions of the second table, on a pair of opposite surfaces opposed at right angles to a direction of movement of said tables, hydrostatically coupling portions comprising hydrostatic pads are formed; and between the upper surfaces of the horizontal extensions of both the tables and said horizontal guide, and between the lower surfaces of the horizontal extensions of both the tables and said horizontal guide, hydrostatically supporting horizontal portions comprising hydrostatic pads are formed;
(9) gap detecting means on said hydrostatically coupling portions for detecting gaps in said hydrostatically coupling portions;
(10) second table position detecting means provided on said second table for detecting an amount of movement of said second table;
(11) a control unit for giving a movement command to said first table, computing a difference between said movement command value and the value of movement from the second table position detecting means for detecting the amount of movement of said second table, and giving a position correcting command to the second table;
(12) a first error detecting means for detecting a difference between the second table position correcting signal from the control unit and the gap detecting signal from said gap detecting means, and producing an error signal;
(13) a servo amplifier for amplifying said error signal; and
(14) a servo valve for supplying differential pressures to said hydrostatically coupling portions in synchronism with the error signal of said servo amplifier;
(15) wherein said second table is first moved by the movement of the first table which has been moved under the movement command from the control unit and by hydrostatically coupling forces produced between the first table and the second table, and then positioned precisely by supplying differential pressures to the hydrostatically coupling portions of the first and second tables under the position correcting command from the control unit.

4,604,834

METHOD AND APPARATUS FOR OPTIMIZING GRINDING

Robert A. Thompson, Quaker Street, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1985, Ser. No. 783,599
Int. Cl.[4] B24B *49/02*
U.S. Cl. 51—165.71 **20 Claims**



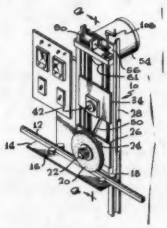
1. Apparatus for optimizing a grinding process which includes a rotating grinding wheel and a rotating workpiece, the apparatus comprising first means for measuring a wheel lobe precession parameter representative of the precession of lobes about the grinding wheel; second means for measuring a workpiece lobe precession parameter representative of the precession of lobes about the workpiece; and third means responsive to the measured lobe precession parameters for determining a chatter growth index representative of the rate of chatter growth in the grinding process.

4,604,835

APPARATUS FOR AUTOMATIC MAINTENANCE OF SURFACE SPEED AND WORK-BEARING FORCE FOR ROTARY TOOL APPARATUS

Charles Borin, 19328 Halstead St., Northridge, Calif. 91324

Filed Sep. 12, 1984, Ser. No. 649,759
Int. Cl.[4] B24B *49/16*
U.S. Cl. 51—165.87 **18 Claims**



1. An apparatus for automatic maintenance of surface speed

of a rotary tool which acts on a work piece advancing therepast comprising:

guide means defining a path for the advance of the work piece;

support means for mounting a rotary tool shaft for supporting the rotary tool with respect to said path;

a drive motor connected to drive the rotary tool;

means for sensing the size of the rotary tool; and

variable speed means connected between said motor and said rotary tool shaft for driving said rotary tool shaft, said variable speed means being a driving shaft connected to be driven by said drive motor and a driven shaft connected to drive said rotary tool shaft, a V-belt pulley fixed to one of said drive and driven shafts and a variable V-belt pulley connected to the other of said drive and driven shafts, said variable pulley having spaced V-belt flanges urged toward each other, a V-belt engaged on both of said pulleys so that said drive shaft drives said driven shaft at a speed ratio governed by the effective pitch diameter of said V-belt on said variable V-belt pulley, V-belt tension of said V-belt urging said drive and said driven shafts toward each other, one of said drive and driven shafts being movably mounted so that it can move toward the other of said drive and driven shafts, a stop post and a plurality of stacked stop fingers connected between said drive and driven shafts to maintain the spacing therebetween, said means for sensing the size of the rotary tool being connected to control said stop fingers so that said stop fingers are moved away from said stop post in order to permit said drive and driven shafts to move closer to each other to change the effective pitch diameter of said V-belt on said variable V-belt pulley to change the speed ratio between said driving and driven shafts so that said variable speed means for driving said rotary tool shaft automatically drives said rotary tool shaft at a greater rotative speed as the rotary tool wears in order to maintain automatically substantially constant surface speed of the rotary tool.

4,604,836

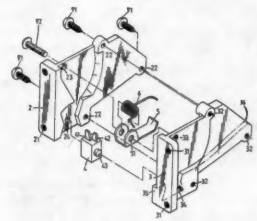
SAFETY CUTLERY CASE WITH SHARPENING DEVICE

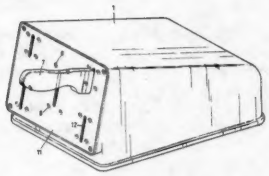
Francke L. D. Huang, 300, Nan Ta Wan, Yung Kang Village, Tainan, Taiwan

Filed Dec. 17, 1984, Ser. No. 682,275

Int. Cl.[4] B24B *3/54;* **B24D** *15/08*

U.S. Cl. 51—214 **2 Claims**





1. A device for storing and sharpening cutlery comprising:

(a) a case defining an interior storage space;

(b) a front panel defining a plurality of slots to facilitate the passage of a cutlery blade therethrough;

(c) attachment means removably and reversibly attaching the front panel to the casing;

(d) a pair of side members attached to the front panel on either side of each slot so as to define a cutlery blade passage therebetween;

(e) sharpening means pivotally attached between the pair of side members; and

(f) spring biased means pivotally mounted between the pair of side members bearing against a cutlery blade so as to urge a cutting edge of the cutlery against said sharpening means as the cutlery is inserted into or withdrawn from the case.

4,604,837

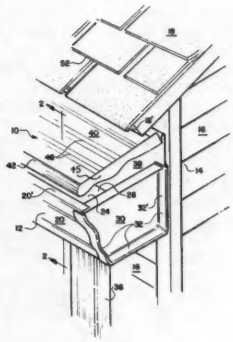
COVER MEMBER FOR RAIN GUTTERS

Tony D. Beam, P.O. Box 777, Stanley, N.C. 28164

Filed Sep. 13, 1985, Ser. No. 775,604

Int. Cl.[4] E04D *13/00*

U.S. Cl. 52—12 **24 Claims**



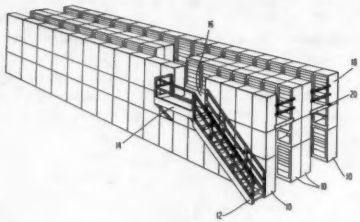
13. In combination with a building structure including a roof having a terminal edge and including further a gutter of the type having spaced upright front and rear walls and a bottom wall extending therebetween forming a collecting trough having an open top, said gutter being mounted to said building structure below said terminal edge of said roof with said rear wall most closely adjacent said building structure for collecting water runoff from said roof, a cover member affixed over said open top of said gutter for directing water runoff to flow thereinto while preventing leaves and debris from entering said gutter, said cover member comprising a cover plate portion being disposed in covering relation over said open top of said gutter with said rearward region extending along said rear wall and beneath said terminal edge of said roof and with said forward region extending along said front wall and outwardly of said terminal edge of said roof, and lip means extending along said forward region and extending upwardly with respect to said forward region, said lip means having a rearwardly facing dam surface to form a dam to water runoff from said roof flowing across said cover plate portion to slow the speed of water runoff from said roof and having a curved forwardly-facing outward surface to cause water runoff flowing over said lip means to flow along said curved outward surface and into said gutter while causing leaves and debris flowing with said water runoff to fall gravitationally over said lip means outwardly of said front wall of said gutter.

4,604,838

MODULAR MEZZANINE STRUCTURE FOR A STORAGE FACILITY AND METHOD OF ASSEMBLY

John L. Remington, Coplay, and Jon A. Boyer, Allentown, both of Pa., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 3, 1983, Ser. No. 548,504
Int. Cl.[4] A47B *45/00*
U.S. Cl. 52—73 11 Claims



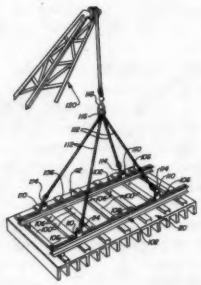
1. A modular mezzanine structure for ready attachment to preexisting storage cabinet structure, the storage cabinet structure comprising a plurality of storage cabinets stacked one on top of the other to a predetermined height, the stacks being arranged side by side in rows and the rows being parallel to each other in face to face relation and spaced apart a predetermined distance, each of the storage cabinets in the rows being formed with preexisting spaced apertures therein, said modular mezzanine structure comprising modular support means for supporting said mezzanine structure, said support means comprising brackets of predetermined length and having feet attached thereto at spaced locations thereon, the length of said brackets being predetermined in relation to the width of the storage cabinets, said feet having dimensions and relative spacing therebetween corresponding to the dimensions and relative spacing of the preexisting apertures in the storage cabinets and adapted for insertion into the apertures to support said brackets, said brackets being paired for application to the facing rows of storage cabinet structures so that said brackets extend along the length of each of the facing rows, and modular platform means adapted for support by said brackets between the facing rows of storage cabinet structure.

4,604,839

TOMB MODULE

John M. Esposito, 130 High Holborn, Lake Forest, Ill. 60045

Filed May 3, 1984, Ser. No. 606,877
Int. Cl.[4] E04H *13/00*; E04F *17/00*
U.S. Cl. 52—124.2 5 Claims



1. A transportable mausoleum assembly including a unitarily cast concrete tomb module having at least five compartments, comprising:

a roof panel;

at least six divider panels unitarily formed with the roof panel, said divider panels projecting downwardly from the roof panel at even spacings to define the compartments therebetween;

a brace having a pair of transverse members rigidly fixing a plurality of longitudinal members substantially in alignment in a plane parallel to the roof panel, said longitudinal members being spaced at multiples of three or less of the divider panel spacings; and

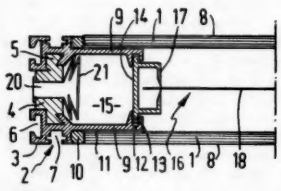
means for securing the longitudinal members to the roof panel and selected divider panels.

4,604,840

DOUBLE GLAZING AND A PROCESS FOR OBTAINING IT

Charles Mondon, 7 bis avenue du Général Leclerc, 91330 Yerres, France

Filed Mar. 26, 1984, Ser. No. 593,387
Claims priority, application France, Mar. 28, 1983, 83 05053
Int. Cl.[4] E06B *7/12*
U.S. Cl. 52—172 11 Claims



1. A glazing comprising two panes located opposite one another and retained by a rigid frame provided with leakproofing means, said frame having sections which are contained completely in the gap defined by the planes of the outer faces of the panes, which sections bear on inner faces of the panes and which sections are fastened to the panes by an anchor preventing the panes from moving apart, said sections having wings and a shape toward the outside of the glazing which allows direct attachment of accessories so as to enable the glazing to interact with a fixed surround, said frame being provided with at least one deformable and leakproof member for equalizing pressure between the outside and inside of the glazing, said member being independent of said leakproofing means and being located on the inside of the glazing in relation to said sections, said frame being also provided with at least one auxiliary member being supported by said wings with projections of one of said auxiliary member and said sections penetrating into grooves of the other of said auxiliary member and said sections with clearance, said auxiliary member dividing the inner space of the glazing into two communicating chambers which are subjected to the same pressure, one of said chambers being peripheral and containing said pressure-equalizing member, said auxiliary member being so made and shaped as to enable said pressure-equalizing member to be wholly protected against the radiation penetrating through the panes, said pressure equalizing member being a pocket in the form of a bellows.

6. A process for producing a glazing comprising the steps of: providing frame sections with a pressure-equalizing member in the form of a bellows; bonding the sections to one another and to two opposing panes to form a leakproof assembly; partitioning space enclosed by said panes and said frame into a first, peripheral chamber and a second chamber in communication with said first chamber by placing an auxiliary member between said sections with projections of one of said auxiliary member and said sections fitting grooves of the other of said auxiliary member and said sections with clearance; locating said pressure-equalizing member within said peripheral cham-

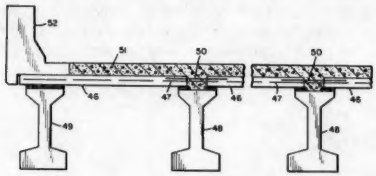
ber so as to wholly protect the pressure-equalizing member against radiation penetrating said panes; after bonding, producing a pressure difference between the two faces of the equalizing member through a sealable orifice in one section and communicating with an interior of the glazing, this pressure difference being such that the average shape of said equalizing member during use will be intermediate between its extreme shapes and subsequently sealing off communications between the interior of the glazing and the outside at least up to the moment when the glazing is used.

4,604,841

CONTINUOUS, PRECAST, PRESTRESSED CONCRETE BRIDGE DECK PANEL FORMS, PRECAST PARAPETS, AND METHOD OF CONSTRUCTION

Robert M. Barnoff, 606 Nimitz Ave., State College, Pa. 16801, and Gordon A. Nagle, P.O. Box 74, R.D. #1, Orwigsburg, Pa. 17961

Filed Apr. 1, 1983, Ser. No. 481,311
Int. Cl.[4] E01D *19/02*
U.S. Cl. 52—174 **5 Claims**



1. In a bridge structure adapted for a long span bridge, comprising in part of supporting beams extending longitudinally the length of the bridge span, said supporting beams themselves being supported by the bridge foundations, the combination comprising:

premanufactured, prefabricated and prestressed partial depth cement concrete panels positioned continuously in a general transverse direction, with a space in between each panel, over supporting beams and supported thereby, said panels comprising:

a plurality of prestressing cables extending within and through said panels in a general perpendicular direction to said supporting bridge beams;

said prestressing cables extending continuously through each panel, through the space in between and through the adjacent panel;

said prestressing cables extending continuously through said panels in an approximate perpendicular direction to the direction of the said supporting beams;

a roughened top surface of said concrete panel to permit bonding;

a cast-in-place cement concrete topping placed on the top surface of said concrete panel to form a smooth continuous top surface thereon, said concrete topping bonded to said concrete roughened top surface panel which when hardened forms a portion of the structural system in conjunction with said panel and bears loads impinging upon said cement concrete topping;

reinforcing members placed within said cement concrete topping, said topping adapted to bond with said panel and in combination therewith act as a structural member;

a shear connecting dowel connecting each of said adjacent panels and extending across the space in between;

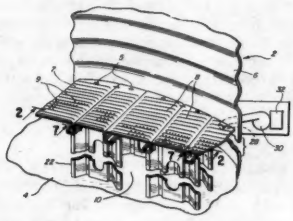
haunches positioned between said panel and said beam, said haunches being of appropriate height to position the top surface of said panel.

4,604,842

DRYING BIN FLOOR

Eugene G. Sukup, Beeds Lake, Hampton, Iowa 50441

Filed Feb. 28, 1985, Ser. No. 706,489
Int. Cl.[4] E04B *1/70*
U.S. Cl. 52—263 **19 Claims**



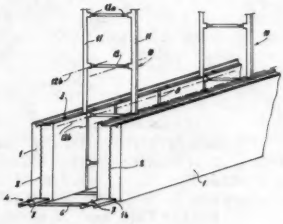
1. A perforate grain bin floor assembly for a supported floor having a space therebeneath comprising a series of elongated panels of formed sheet material, each of said panels having a generally planar top portion and depending flanges along each longitudinal edge of said top portion, said top portions of successive panels in said series being perforate to permit the passage of air therethrough and being contiguous to one another along said longitudinal edges of said top portions, each of said flanges of alternate panels in said series extending downward and outward from the respective edge of the top portion thereof, each of said flanges of each of said panels which intervenes between said alternate panels extending downward and inward from the respective edge of the top portion of such intervening panel and engaging in nesting relation with the respective adjacent flange of the adjacent alternate panel, whereby said top portions form a generally continuous planar floor surface while permitting the passage of air therethrough, and each of said intervening panels may be selectively lifted from said assembly for access to the space subjacent said panels.

4,604,843

LOST-FORM CONCRETE FALSEWORK

Renaud P. L. Ott, Saint Laurent Du Pont, and Georges E. P. Jalabert, Saint Ismier, both of France, assignors to Societe Anonyme Dite "Etablissements Paturle" , Saint Laurent Du Pont, France

Filed Feb. 8, 1984, Ser. No. 577,959
Claims priority, application France, Feb. 8, 1983, 83 02166; Sep. 28, 1983, 83 15742
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—426 **20 Claims**



1. A lost concrete form comprising:

a multiplicity of slabs adapted to remain in place subsequent to the casting of concrete in the form and including at least two slabs in horizontally spaced upright orientation in at least one tier; and

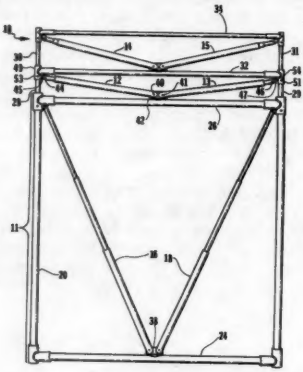
a plurality of rigid ladder-like connecting elements each having a pair of longitudinal members each resting upon an upper edge of a respective one of said slabs, said longitudinal members and said upper edges of said slabs having mutually engaging formations anchoring said longitudinal members to slabs, each ladder-like connecting element further having a plurality of mutually parallel transverse members bridging said longitudinal members and rigidly connected thereto, spanning between said slabs and anchored in the concrete upon the casting thereof between said slabs whereby said connecting elements retain said slabs on the concrete structure resulting from the hardening of concrete cast between said slabs.

4,604,844

DEPLOYABLE M-BRACED TRUSS STRUCTURE

Martin M. Mikulas, Jr., Williamsburg, and Marvin D. Rhodes, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1985, Ser. No. 760,378
Int. Cl.[4] E04H *12/18*; E04G *25/04*
U.S. Cl. 52—632 **5 Claims**



4. An M-braced truss structure comprising:
a plurality of interconnected truss sections,
each said truss section having at least one elongated structural cross-member or batten,
at least one axial structural member or longeron attached to each end of said batten,
a pair of diagonal structural members hingedly connected at one end thereof substantially intermediate said batten and hingedly connected at the other end thereof to an end of one said longeron, and
each said longeron and each said diagonal being formed of telescoping segments and adapted to be moved from a stowed compressed position to an expanded operative truss structure.

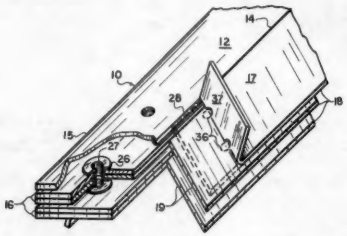
4,604,845

CONTINUOUS PIVOTED SPACING TIE

Sheridan F. Brinker, 1621 Sweem St., Oroville, Calif. 95965

Continuation-in-part of Ser. No. 623,509, Jun. 22, 1984. This application Feb. 13, 1985, Ser. No. 701,186
Int. Cl.[4] E04C *3/02*
U.S. Cl. 52—696 **8 Claims**

1. A spacing brace apparatus for temporarily interconnecting a number of wooden structural members in a parallel array comprising a series of rigid spacer segments of equal length pivotably interengaged in a manner permitting nested stacking in a storage state and rapid deployment to a linearly sequenced working state, each spacer segment being of substantially integral construction and comprised of: (a) a top panel of flat rectangular configuration elongated about a center longitudinal axis and having parallel first and second long side edges extending between short edge extremities which define the length of said panel, (b) a side panel of elongated flat rectangular configuration emergent from alternating first and second long side edges of successive spacer segments, said side panel



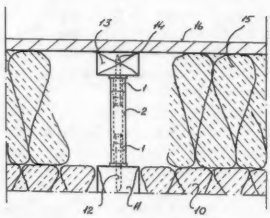
being of shorter length than said top panel and angled thereto, (c) tangs disposed at each extremity of said top panels as portions thereof extending beyond the length of the associated side panel, (d) fasteners located within said tangs and adapted to pivotably interengage adjacent spacer segments, and (e) a nail receiving aperture located within said fasteners, the first and last spacer segments of said series having free distal extremities whose tangs are without said fasteners.

4,604,846

ANCHORAGE DEVICE

Leif E. J. Ekström, Matterödsgaten 16, 282 00 Tyringe, Sweden

Filed Jan. 29, 1985, Ser. No. 699,511
Claims priority, application Sweden, Feb. 10, 1984, 8400713
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—704 **7 Claims**



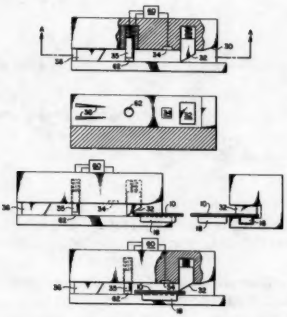
1. A device for anchoring a first element to a second element, said elements being spaced apart with respect to one another, comprising; a cylindrical plug-like member having a longitudinal bore for receiving a fastener which anchors said plug-like member to said first element, a spacer adapted to be fixed to the second said element; said plug-like member and said spacer having ends which are provided with mutually cooperable snap-like locks which are operable to connect the plug-like member and the spacer and their associated elements to one another, said plug-like member having a foot for abutting against said first element, said spacer having at at least one end a hole dimensioned so as to receive said plug-like member.

4,604,847

MEDICINE PACKAGE, METHOD OF OPENING THE PACKAGE, AND MACHINE FOR PERFORMING THE METHOD

Thomas S. Moulding, Jr., 1954 Glencoe St., Denver, Colo. 80220, and Donald G. Ellis, Geneva Park, Boulder, Colo. 80302

Filed Sep. 14, 1983, Ser. No. 532,038
Int. Cl.[4] B65B *43/26*
U.S. Cl. 53—75 **126 Claims**



1. A machine for opening a package, the package having a reservoir and bearing a code indicating information concerning the characteristics of the contents thereof, comprising:

means for guiding the code bearing portion of the package along a selected path;

means for deciphering the code as the code bearing package portion travels forward along the path; and

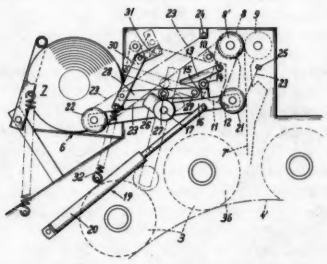
means for cutting the package when the code bearing package portion travels forward along the path.

4,604,848

LARGE BALING PRESS

Gerhard Clostermeyer, Gutersloh, Fed. Rep. of Germany, assignor to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,752
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424567
Int. Cl.[4] B65B *11/04*
U.S. Cl. 53—118 **9 Claims**



1. A large baling press for forming bales of agricultural products, comprising means forming a pressing chamber for pressing a bale and including side walls which limit said pressing chamber laterally and a plurality of driven winding elements which limit said pressing chamber peripherally; means for supplying a web material to wrap a finished bale so that a portion of the web material with a predetermined length is pulled from said supplying means by the bale and said winding elements; means for cutting the pulled portion of the web material and including a cutter; and braking means acting upon the pulled portion of the web material and including two rods which are wrapped around by the web material and provided with means for rotatably mounting one of said rods around its own axis and means for turning the other of said rods around and parallel to said one rod

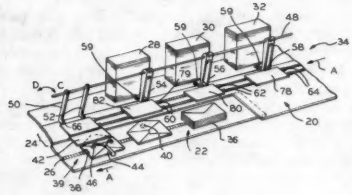
wherein said means for turning said other rod includes a turning arm having two ends of which one end is fixedly connected with said one rotatable rod to rotate said arm, a shackle articulately connected with the other end of said turning arm, spring means connected to said shackle for biasing said other rod into the path of the web material for braking the web, and a lifting arm engaging said shackle against said spring means for moving said other rod out of the path of the web material.

4,604,849

INSERTION MACHINE DRIVE

Edward H. Zemke, deceased, late of Chicago, Ill. (by Anne Zemke, legal representative); Kenneth L. Guenther, Park Ridge, Ill., and Gerald D. Warden, Easton, Pa., assignors to Bell & Howell, Chicago, Ill.

Filed Sep. 7, 1984, Ser. No. 648,640
Int. Cl.[4] B65B *43/30*; B65H *29/12*
U.S. Cl. 53—266 A **22 Claims**



1. A common power drive for a stationary device and for a moveable device adapted to move back and forth over a fixed excursion relative to the stationary device, said common power drive comprising a stationary means having at least one rotary power output means, a parallelogram drive means operated responsive to power delivered by said power output means, said moveable device comprising one side of said parallelogram, a pair of spaced parallel drive linkages of fixed length connected to opposite ends of said moveable device, each of said spaced parallel linkages having a free end, means for restraining said free ends of said linkages in the directions of said movement of said moveable device while enabling a free floating in a direction which extends angularly relative to said movement, and means for delivering power from said power output means to the free ends of said spaced parallel linkages; wherein said power drive is part of an insertion machine, said stationary device includes at least one means for delivering inserts to a stuffing position and said moveable device comprising means for delivering envelopes opposite said inserts at said stuffing position, said excursion of said moveable device providing means for aligning the inserts and envelopes at said stuffing position; wherein each of said drive linkages comprises an elongated mechanical link of fixed length having a rotating wheel on each of the opposite ends of said link, a running belt trained over each of the wheels on said link, and a pair of running belts extending from said output means to a wheel on said free ends of an individually associated one of said links, whereby the excursions of said moveable device are distrib-

uted over four running belts associated with said pair of spaced parallel drive linkages and said output power means.

4,604,850

PACK FOR FLUID FILLING MATERIALS WITH RECLOSABLE OPENING DEVICE

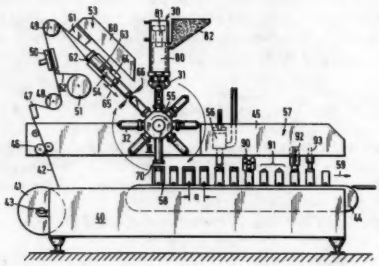
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Division of Ser. No. 319,907, Nov. 10, 1981, abandoned. This application Jul. 17, 1984, Ser. No. 631,152

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043134

Int. Cl.[4] B65B *3/04*

U.S. Cl. 53—423 **22 Claims**



1. An apparatus for making a container comprising tube forming, cover molding, container filling and base sealing stations, the tube forming station comprising means for forming fold impressions on a continuous web of container supporting material, means for shaping the continuous web of material into a strand of connected tubular container bodies with fold impressions, means for sealing the longitudinal edges of said strand, means for advancing the tubular strand and severing the strand into separate bodies of partially assembled containers with said fold impressions; the cover molding station comprising means for receiving and positioning severed tubular bodies from the tube forming station, said cover molding station including means for molding thermoplastic covers onto the tubular bodies and means for removing containers from the receiving and positioning means, said apparatus having means for receiving the covered containers from the cover molding station for filling at the filling station and means for sealing the container base at the base sealing station.

4,604,851

METHOD AND APPARATUS FOR THE INTERMEDIATE STORAGE OF PRINTED PRODUCTS ARRIVING IN AN IMBRICATED PRODUCT FORMATION SUCH AS NEWSPAPERS, PERIODICALS AND THE LIKE

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 4, 1984, Ser. No. 616,677

Claims priority, application Switzerland, Jun. 9, 1983, 3159/83

Int. Cl.[4] B65B *63/04;* **B65H** *29/70*

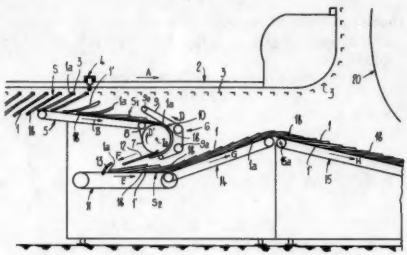
U.S. Cl. 53—430 **22 Claims**

1. A method for the intermediate storage of printed products arriving in an imbricated product formation, comprising the steps of:

delivering said printed products in an imbricated product formation with predetermined edges of the printed products trailing;

altering the position of the printed products within said imbricated product formation such that said predetermined edges now lead and upper sides of the printed products become lower sides; and

winding up the printed products in imbricated product formation upon a winding mandril and conjointly with a winding band maintained under tension to form a wound



product package with the predetermined, now leading, edges in contact with a next inner layer of the wound product package being formed.

4,604,852

PROCESS AND APPARATUS FOR PRODUCING CONSECUTIVE PACKAGES FOR DRINKING STRAWS OR THE LIKE

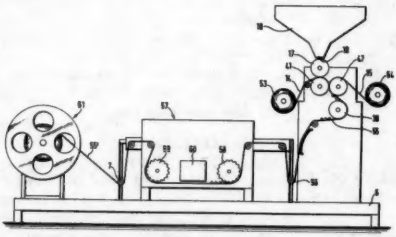
Gert Becker, Bremen, Fed. Rep. of Germany, assignor to Overbeck GmbH & Co., Bremen, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,263

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307941

Int. Cl.[4] B65B *19/34*

U.S. Cl. 53—444 **19 Claims**



1. A process for producing consecutive packages for drinking straws, or the like, that are received spaced from one another between two foil sheets secured to one another, said method comprising:

(a) providing a supply funnel for a plurality of drinking straws arranged in parallel relationship, said supply funnel including a discharge opening having a width greater than the diameters of two straws;

(b) providing a first carrier for receiving and carrying drinking straws in parallel, spaced relationship, said carrier having a plurality of spaced, parallel grooves, each groove adapted to receive a single straw;

(c) moving said first carrier past said funnel discharge opening to deposit individual straws in individual grooves in said first carrier;

(d) retaining the straws in the grooves by means of suction;

(e) providing a second carrier for receiving and carrying straws in parallel, spaced relationship, said second carrier having a plurality of spaced, parallel grooves, each groove adapted to receive a signle straw;

(f) passing a first packaging foil over the surface of said second carrier;

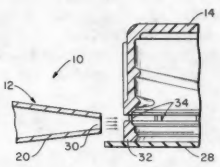
(g) carrying the straws by means of said first carrier to said second carrier;
(h) positively transferring individual straws from the grooves in said first carrier to the grooves in said second carrier with movable transfer means;
(i) simultaneously pressing the transferred straws and the packaging foil into the grooves in said second carrier;
(j) passing a second packaging foil over said first packaging foil to enclose the straws therebetween;
(k) joining together the first and second foils outwardly of the straws to form a band of spaced, parallel straws positioned between the first and second foils; and
(l) forming spaced cuts in said band between consecutive straws.

4,604,853

METHOD AND APPARATUS FOR SEALING A CONTAINER WITH A TAMPER-EVIDENT CLOSURE

Leman P. Albrecht, and Darwin L. Ellis, both of Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 3, 1984, Ser. No. 677,283
Int. Cl.[4] B65B *7/28*
U.S. Cl. 53—487 **4 Claims**



1. The method of sealing a container with a mechanical lock type tamper-evident closure comprising the steps of:
providing such a closure with
a preformed thermoplastic tamper-indicating portion which is configured to cooperate with a container to provide visible indication of tampering upon first removal of the closure from the container;
applying heat to said tamper indicating portion to induce an increase in the flexibility thereof sufficient to permit application of the closure to a container without damage to said tamper-indicating portion;
maintaining said increased flexibility for a limited period;
applying said closure to a container during said limited period; and
permitting said closure to return to said normal flexibility whereby, upon subsequent removal of said closure from said container, said tamper-indicating portion will provide said visible indication of tampering.

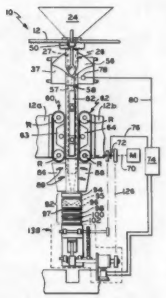
4,604,854

MACHINE FOR FORMING, FILLING AND SEALING BAGS

David W. Andreas, Minneapolis, Minn., assignor to Golden Valley Foods Inc, Eden Prairie, Minn.

Filed Dec. 5, 1983, Ser. No. 557,752
Int. Cl.[4] B65B *9/06*
U.S. Cl. 53—552 **12 Claims**

12. In a vertical form, fill and seal packaging machine for forming bags from flexible packaging material including a tube former for forming packaging material into a tube with overlapping edges to provide a series of flexible packages, a dispenser for a product and a product transfer tube having an inlet at its upper end and, extending downwardly through the tube former and a drive means for advancing the flexible packaging material over the tube former and downwardly around the transfer tube, the improvement comprising first and second vertically disposed longitudinally extending spaced apart tube forming plates disposed on opposite sides of the product transfer tube to form the front and rear surfaces of the bag with gusset forming blades between the plates for forcing portions of the flexible tube into a region between the plates, said plates having substantially parallel upper portions and lower portions having lower ends which converge toward one another proceeding toward their lower ends in the region of the gusset forming blades, said transfer tube having a side opening at its lower end adapted to expel product passing downwardly therethrough laterally toward one side of the bag, one of said plates adjacent to the opening in the dispensing tube having a vertically disposed slot therein extending upwardly from its lower end, whereby the end of the second plate is bifurcated and includes spaced apart vertically disposed tube forming elements at its lower end and the side opening of the product transfer tube is located at a point where the product is emptied into each successive bag so that the product in the tube is



transferred toward the side through the slot in the forming plate, the product transfer tube having an inlet adjacent the dispenser and a liquid fill tube is provided having an upper end portion adjacent the inlet of the dispensing tube and extending downwardly parallel to the transfer tube through the tube former such that the flexible packaging material is formed into a tube around both the liquid fill tube and the product transfer tube and the liquid fill tube extends a substantial distance toward the bottom of the product transfer tube to prevent significant mixing of the liquid and product in the product transfer tube whereby mixing thereof occurs in situ within bags formed from the flexible packaging material and valve means operatively connected to the liquid fill tube to control the flow of liquid therethrough into the bags as they are formed and sealing members for bonding the tube of packaging material to itself at spaced apart intervals thereby forming a succession of bags.

4,604,855

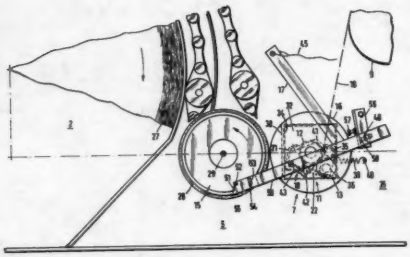
WRAPPING APPARATUS FOR ROUND BALES IN BALING PRESSES

Bernard Krone, Spelle, and Wilhelm Ahler, Stadtlohn, both of Fed. Rep. of Germany, assignors to Maschinenfabriken Bernard Krone GmbH, Spelle, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,367
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3322024
Int. Cl.[4] B65B *11/04, 61/06*
U.S. Cl. 53—64 **21 Claims**

1. Wrapping apparatus for use with a baling machine of the type having a forming chamber in which a round bale is formed and into which a wrapping material is fed to wrap said bale, comprising a housing means, feeding means mounted on said housing means for feeding a wrapping material from a source of wrapping material to said forming chamber, drive means mounted on said housing for movement between a non-drive position and a drive position for driving said feeding means, biasing means between said drive means and said hous-

ing means for biasing said drive means into said non-drive position wherein said drive means is disengaged from driving said feeding means, cutter means pivotably mounted on said drive means for cutting said wrapping material after the wrapping material exits said feeding means, said cutter means being pivotable between a cutting position and a non-cutting position in which said cutter means is clear of the wrapping material exiting from said feeding means, a pivotal lever means connected to said drive means and movable between an initial position and at least one operable position, said pivotal lever means being movable from said initial position to said operable position to move said drive means from its non-drive to its drive position to thereby cause said drive means to drive said feeding means to feed said wrapping material, cutter actuating means mounted on said drive means and connected to said pivotal lever means such that said pivotal lever means in moving from said initial position to said at least one operable position pivots said cutter means from said cutting position to the



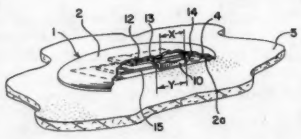
non-cutting position, means for moving said cutting means to said cutting position, meter means operably connected to said cutter actuating means for retaining said cutter means in said non-cutting position while metering an adjustable predetermined amount of wrapping material fed to wrap said bale, said pivotable lever means being movable by an operator from said initial position to said at least one operable position to pivot said cutter means to said non-cutting position and to actuate said meter means to retain said cutter means in the non-cutting position while metering a metered amount of wrapping material fed to wrap said bale, said metering means having means to actuate said means for moving the cutter means to said cutting position after said metered amount has been metered and when said material has been fed into the pressing chamber and into contact with the bale to thereby release said retention of said cutter means so that the cutter means moves to the cutting position and in so doing cuts off said metered amount of wrapping material.

4,604,856

RELEASABLE AFFIXATION OF ARTICLE OF MANUFACTURE TO AN ENVIRONMENT

Donald Schneider, 7515 Cedar Rd., Chesterland, Cuyahoga County, Ohio 44026, and Stanley Schneider, 1820 Chartley Rd., Gates Mills, Cuyahoga County, Ohio 44122

Filed Oct. 18, 1984, Ser. No. 662,164
Int. Cl.[4] B68B *1/00*
U.S. Cl. 54—76 **18 Claims**



1. An article of manufacture comprising

at least two surfaces,

one of said surfaces further comprising first means whereby said article may be releasably attached to extant means in the environment of intended attachment of said article,

said first means comprising generally U-shaped resilient clip means having a first leg, a second leg, and a joint joining said legs, said first leg being secured to said surface of said article, said second leg extending rearwardly and downwardly from said surface and joint,

said extant means comprising outwardly extending bridging means,

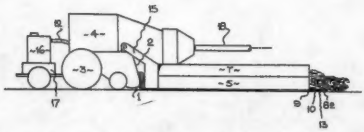
at least one of said legs of said first means comprising detent means disposed so as to extend towards the other of said legs and in spaced relationship from said joint, whereby the interior space formed between said first and second legs is divided into at least two longitudinal portions extending substantially parallel to said surfaces, such that the portion between said joint and said detent means is of a longitudinal dimension so as to substantially mate with said extant means while effecting releasable attachment therewith.

4,604,857

HAY PRE-CONDITIONER

Jack Maher, 12 Williams Street, Forbes, N.S.W. 2871, Australia

Filed Feb. 24, 1984, Ser. No. 583,385
Claims priority, application Australia, Feb. 25, 1983, 1243483
Int. Cl.[4] A01D *14/02, 39/00*
U.S. Cl. 56—16.4 **16 Claims**



1. A hay pre-conditioner in association with a hay-baler having a pick-up, said hay pre-conditioner comprising an elongated box-like structure having opposed sidewalls and a top wall, and being adapted to be supported so as to progressively substantially enclose a portion of a windrow over which it is caused to travel; means mounting the box-like structure to the hay-baler so as to be raisable relative thereto; and a steam generator disposed adjacent to said hay-baler, and in communication with a plurality of steam outlet nozzles within said box-like structure, located towards the forward end thereof; whereby, as said hay pre-conditioner is caused to progress so as to traverse a windrow, the windrowed material is treated with steam emerging from said steam outlet nozzles, and is subsequently garnered by the pick-up of said hay-baler for feeding into a feed opening thereof.

4,604,858

PLUNGER CLEANOUT APPARATUS FOR UNDERFED CROP BALER

Edward W. Esau, and Howard J. Ratzlaff, both of Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jun. 15, 1984, Ser. No. 620,963
Int. Cl.[4] A01D *39/00*
U.S. Cl. 56—341 **9 Claims**

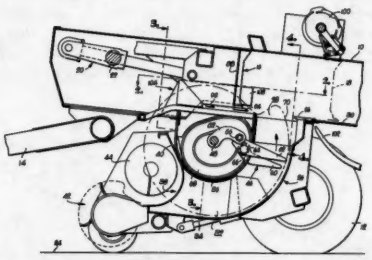
1. In a crop baler having a baling chamber and a plunger reciprocable in said chamber through compaction and retraction strokes, the improvement comprising:

means defining at least one clearance slot in the cropengaging face of said plunger;

structure movable through said slot during at least a portion of the operating cycle of the plunger;

apparatus separate from said structure and insertable into the clearance slot during retraction of the plunger to remove

obstructing crop materials therefrom in order to avoid interference of the crop materials with said structure when the latter is moved through the slot; and



means mounting said apparatus for removal of said obstructing crop material from said slot and into said baling chamber in a direction opposite to the direction of movement of said plunger during retraction thereof.

4,604,859

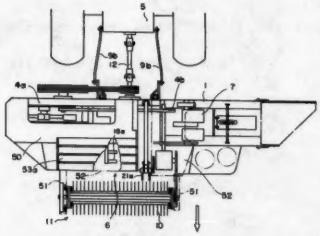
AGRICULTURAL BALER

Chuichi Sasaki; Haruo Sasaki; Katumi Miyajima, all of Towada, and Kaoru Ebisawa, Nohejimachi, all of Japan, assignors to Sasaki Nouki Kabushiki Kaisha, Towada, Japan

Filed May 16, 1985, Ser. No. 734,918

Int. Cl.[4] A01D *59/00*

U.S. Cl. 56—341 **9 Claims**



1. In an agricultural baler comprising pick-up means, compressing means, and bundling means, said baler being driven by power of a tractor,

the improvement comprising:

a bale chamber transversely provided with respect to a direction of running of said tractor;

said compressing means and said bundling means being contained in said bale chamber, said compressing means comprising a plunger reciprocating in said bale chamber to perform advance and return strokes;

a counter weight reciprocating in a direction opposite to the direction of movement of said plunger; and

link means for directly mounting said baler on said tractor.

4,604,860

METHOD FOR STRANDING PROFILE STRANDS

Takayuki Matsuura, and Kenji Miyazaki, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

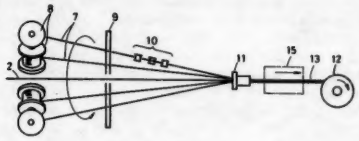
Filed Dec. 20, 1984, Ser. No. 683,925

Claims priority, application Japan, Jan. 23, 1984, 59-10595

Int. Cl.[4] D07B *5/10, 3/00, 7/00*

U.S. Cl. 57—9 **15 Claims**

1. A method of stranding profiled strands for forming a cable, comprising the steps of first spirally stranding a plurality of profiled strands (7) together around a central core means while imparting twist to each profiled strand to form said cable and then heat-treating said plurality of profiled strands (7) in said cable together with said core means, said heat-treating



step taking place in a temperature range and for a time duration sufficient for removing stress from said profiled strands.

4,604,861

METHOD AND APPARATUS FOR STRANDING PROFILE STRANDS

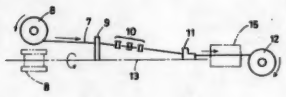
Takayuki Matsuura, and Kenji Miyazaki, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

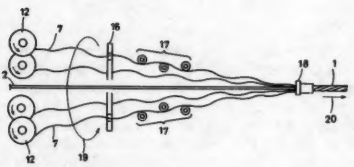
Filed Dec. 17, 1984, Ser. No. 682,652

Claims priority, application Japan, Dec. 26, 1983, 58-248942

Int. Cl.[4] D07B *5/10, 3/00, 7/00*

U.S. Cl. 57—9 **29 Claims**





1. A method for stranding a plurality of profile strands (7) together around a central wire means having a central axis (2), comprising the steps of: first imparting a spiral twist having a given twist pitch to each of said plurality of profile strands (7) whereby a certain stress is introduced into each profile strand, then subjecting said strands to a heat treatment within a temperature range and for a time duration sufficient for again removing said stress from said twisted profile strands for providing twisted but unstressed strands, and then subjecting said twisted and unstressed strands to a planetary motion with respect to said central axis for stranding said plurality of twisted and unstressed profile strands around said central wire means thereby using a stranding twist pitch which is substantially the same as said given twist pitch.

4,604,862

MANUFACTURE OF TELECOMMUNICATIONS CABLE CORES

Philip A. McGettigan, Montreal, and Jean M. Roberge, Pointe Claire, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 27, 1983, Ser. No. 565,633

Int. Cl.[4] D01H *7/46, 1/10, 7/86*

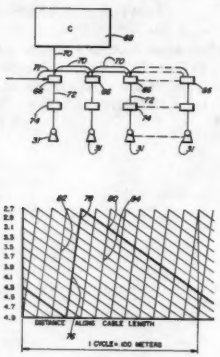
U.S. Cl. 57—264 **8 Claims**

1. Apparatus for making a core unit for a telecommunications cable from twisted unit of individually insulated conductors comprising:

a plurality of twisting machines disposed in an in-parallel relationship to one another relative to a general passline through the apparatus, each machine for carrying a plurality of reels of insulated conductor and each machine comprising a flyer which is rotatable to introduce twist into conductors to cause them to twist to form a twisted unit;

rotating means for rotating each of the flyers at speeds which are variable independently of other flyers and for changing the ratio of the rotational speed of the flyers, each rotating means comprising a variable speed drive motor;

control means to control the speed of each variable speed drive motor for rotating the flyer of the associated twisting machine at a speed appropriate to the line speed of the apparatus to produce the desired angle of twist lay, the control means including a computer, a microprocessor for each drive motor, the computer connected to each micro-



processor to send a first signal thereto which corresponds to the desired angle of twist lay of a twisted unit to be formed by the associated twisting machine at a given line speed of the apparatus, each microprocessor having a memory for storage of the first signal, a measuring device for measuring the actual line speed and for sending a second signal corresponding to actual line speed to each microprocessor, each microprocessor capable of emitting a basic control signal corresponding to the stored first signal as modified by the second signal to control the speed of its associated drive motor to provide the desired angle of twist lay at the actual line speed; and

a core unit forming and take-up means in tandem with and downstream from the twisting machines to draw the twisted units together and form a core unit, the forming and take-up means comprising drawing means to draw twisted units into the forming and take-up means.

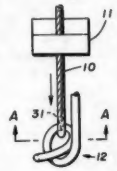
4,604,863

PIGTAIL GUIDE FOR STAPLE SPINNING

Don E. Fisher, Pensacola; John W. Fuqua, Milton, and Arnold E. Wilkie, Pensacola Beach, all of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 28, 1985, Ser. No. 695,513
Int. Cl.[4] D01H *13/04, 7/10*
U.S. Cl. 57—352 **16 Claims**

1. In a ring spinning frame position for continuously converting sliver to yarn, said position comprising means for drafting sliver to a desired count including a pair of rotatable nip rolls for forwardly drafted sliver away from said drafting means, an upright rotatable spindle disposed below said nip rolls and being adapted to receive a bobbin, a ring-and-traveler take-up mechanism associated with said spindle for inserting twist in sliver and then winding the sliver onto a bobbin mounted on said spindle, and a pigtail balloon guide having an elongated body, one end of which is attached to said spinning frame position and the other end of which is in the shape of a single-looped coil terminating in a straight piece extending outwardly from the coil for threading of sliver through the loop, and being disposed between said nip rolls and said take-up mechanism for facilitating winding of sliver onto said bobbin, said guide being vertically in line with said spindle and having a yarn contact surface over which sliver makes rubbing contact enroute from said nip rolls to said take-up mechanism,



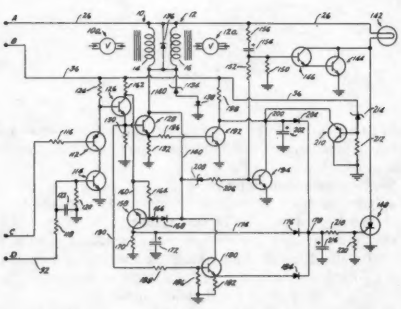
wherein said nip rolls are disposed from said guide at an angle (θ) of at least 10° from vertical, the improvement wherein said guide is characterized in that when viewed from a point where said spindle is in line with the vertical center line of said nip rolls said yarn contact surface is tiled downwardly from left-to-right for spindles rotating in a clockwise direction and upwardly from left-to-right for spindles rotating in a counter-clockwise direction.

4,604,864

CONTROL CIRCUIT FOR USE WITH AIR-DIVERTER VALVE OF INTERNAL COMBUSTION ENGINE

Peter J. Lupoli, Hamden, Conn., assignor to Casco Products Inc., Bridgeport, Conn.

Filed May 10, 1984, Ser. No. 608,711
Int. Cl.[4] F01N *3/22*
U.S. Cl. 60—290 **11 Claims**



1. An electronic control circuit for actuating an air-diverter valve connected with the exhaust system of an internal combustion engine to supply air thereto, comprising in combination:

(a) means responsive to engine speed, for operating said air diverter valve toward its closing position if a predetermined time interval has elapsed with the engine running above a given speed, and

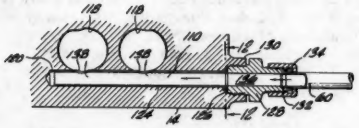
(b) means responsive to engine speed, for rendering inoperative the first mentioned means if there has elapsed a second time interval, shorter than said first predetermined time interval, during which the engine has run continuously at a speed lower than said given speed, all to the end that exhaust pollutants are reduced without incurring excessive heating of the exhaust system.

4,604,865

EXHAUST SYSTEM AIR INTRODUCTION DEVICE

Junji Otani, Saitama; Akira Okubo, Tokyo, and Kanau Iwashita, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1983, Ser. No. 485,202
Claims priority, application Japan, Apr. 24, 1982, 57-69185; Apr. 24, 1982, 57-69186
Int. Cl.[4] F01N 3/30
U.S. Cl. 60—293 24 Claims



1. An air introduction device for the exhaust system of an engine having exhaust ports and exhaust passages leading therefrom, comprising

a bore in the engine extending in a partially overlapping tangential intersection with one of said exhaust passage near the exhaust port, thereby defining a hole between said bore and the exhaust passage; and

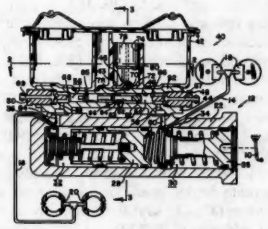
a pipe rigidly positioned in said bore to line said bore at least adjacent said hole, said pipe including a nozzle through the sidewall thereof aligned with said hole.

4,604,866

MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 6, 1984, Ser. No. 647,774
Int. Cl.[4] F15B 7/00
U.S. Cl. 60—535 13 Claims



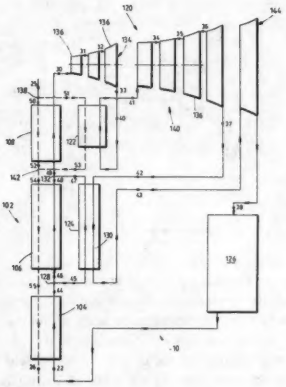
1. A master cylinder comprising a housing movably receiving a pair of pistons in order to develop fluid pressure in a pair of pressure chambers during braking, a reservoir assembly carrying fluid for communication to the pair of pressure chambers in a rest position, a differential area piston exposed to the pair of pressure chambers and operable during braking to actuate a signal circuit in response to a failure mode in either pressure chamber, a float disposed in the reservoir assembly in order to also actuate the signal circuit in response to the fluid level in the reservoir assembly falling below a predetermined amount and a reed switch or the like controlling the signal circuit, characterized in that said reservoir assembly defines a first bore extending from a front end to a rear end for receiving said differential area piston, said reservoir assembly defines a second bore extending transversely to said first bore for receiving said reed switch or the like, said float carrying a first magnet for disposition adjacent said second bore when the fluid level is below the predetermined amount, and said differential piston carrying a second magnet and a third magnet which are normally equally spaced from said reed switch in the absence of a failure mode.

4,604,867

METHOD AND APPARATUS FOR IMPLEMENTING A THERMODYNAMIC CYCLE WITH INTERCOOLING

Alexander I. Kalina, 12214 Clear Fork, Houston, Tex. 77077

Filed Feb. 26, 1985, Ser. No. 705,906
Int. Cl.[4] F01K 7/38, 25/00
U.S. Cl. 60—653 30 Claims



1. A method for implementing a thermodynamic cycle comprising the steps of:

expanding a gaseous working fluid to transform its energy into usable form;

cooling said expanded gaseous working fluid;

expanding said cooled working fluid to a spent low pressure level to transform its energy into usable form;

condensing said spen working fluid; and

evaporating said condensed working fluid using heat transferred during cooling from said expanded gaseous working fluid.

4,604,868

CLEANER CONTROL FOR DIESEL ENGINE EXHAUST GASES

Yoshitaka Nomoto, and Tsutomu Matsuoka, both of Higashihiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshiuma, Japan

Filed Nov. 30, 1983, Ser. No. 556,616
Claims priority, application Japan, Dec. 4, 1982, 57-184193
Int. Cl.[4] F01N 3/02
U.S. Cl. 60—286 3 Claims

1. An exhaust cleaner system for a diesel engine having an exhaust system for the discharge of exhaust gases emitted from the discharge of exhaust gases emitted from the engine, said cleaner system comprising, in combination:

an exhaust duct for conducting engine exhaust gas;

a cleaner having a filter disposed therein and an upstream compartment located upstream of the filter, said upstream compartment communicating with the exhaust duct for directing exhaust gases to the filter which traps carbon particulates carried by the exhaust gases;

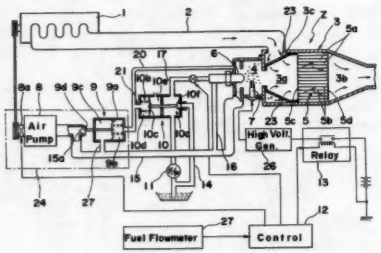
a burner unit including a combustion chamber having an outlet communicating with said upstream compartment and including a fuel nozzle and an igniter for combusting a mixture of fuel and air to produce a flame for providing to said outlet a high temperature combustion gas necessary to elevate the temperature of the exhaust gases enter-

ing said upstream chamber to a temperature suitable for incinerating carbon particulates trapped by the filter;

an air supply means for supplying air to the combustion chamber upstream of the outlet thereof;

a fuel supply means for supplying fuel to the combustion chamber upstream of the outlet thereof;

sensing means for sensing pressure inside the combustion chamber upstream of the outlet thereof and for generating a signal indicative thereof;



an air pressure regulating means actuated by said signal for increasing the pressure of the air supplied to the combustion chamber in correspondence with an increase in pressure within the combustion chamber; and

a fuel pressure regulating means actuated by said signal for increasing the pressure of fuel supplied to the combustion chamber in correspondence with an increase in pressure within the combustion chamber, said burner operative during the discharge of the exhaust gases through the filter.

4,604,869

POROUS CERAMIC STRUCTURE

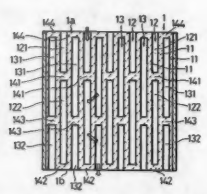
Hitoshi Yoshida, Okazaki; Yukihisa Takeuchi, Chita, and Yasunao Miura, Kasugai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 30, 1985, Ser. No. 739,100

Claims priority, application Japan, May 31, 1984, 59-112302

Int. Cl.[4] F01N *3/02*; B01D *39/20*

U.S. Cl. 60—311 **15 Claims**



1. A porous ceramic structure comprising porous partition walls forming a multiplicity of passage regions positioned adjacent to one another and extending from the upstream side to the downstream side of said porous ceramic structure and partition portions sectioning said passage regions, said passage regions are respectively provided with at least one of said partition portions and some of said passage regions are provided with at least two of said partition portions to form at least one intermediate passage having said partition portions on both the upstream and downstream sides thereof and one end passage having at least one open end and one closed end, said end passages comprise inlet passages which are open at the upstream side thereof and closed by said partition portions at the downstream side thereof and outlet passages which are closed by said partition portions at the upstream side thereof and open at the downstream side thereof,

and said partition portions positioned at intermediate portions of said passage regions are located respectively at positions corresponding to intermediate portions of at least one of said intermediate passages positioned adjacent thereto with said porous partition walls therebetween.

4,604,870

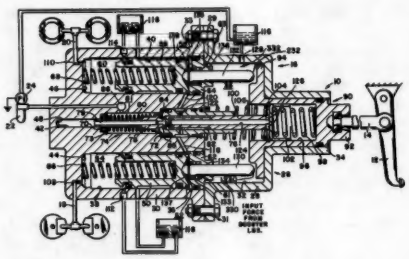
BRAKE BOOSTER

Lloyd G. Bach; Lawrence R. Myers, both of South Bend, Ind., and Robert F. Gaiser, Stevensville, Mich., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 3, 1984, Ser. No. 677,271

Int. Cl.[4] B60T *13/20*

U.S. Cl. 60—551 **4 Claims**



1. A brake booster including a housing with a first bore (38) receiving first piston (50), a second bore (40) parallel to the first bore (38) and receiving a second piston (56), a third bore (42) receiving a valve assembly (74), an input assembly (90) extending into the housing and responsive to an input force for moving valve assembly (74) during a brake application to control fluid pressure communication to the first and second bores, and connecting means (330, 332) disposed between the input assembly (90) and the first and second pistons (50, 56) to provide a mechanical connection therebetween, the improvement wherein said connecting means (330, 332) comprises pins (130, 132) which are urged toward the first and second pistons (50, 56), respectively, by resilient means (133, 135) to establish a gap between said input assembly and connecting pins (130, 132), said gap allowing said input assembly (90) to move said valve assembly (74) and communicate fluid pressure to said first and second bore (38, 40) whereby said pistons (50, 56) are moved to actuate brake assemblies associated with said first and second bores (38, 42), said fluid pressure in said bores (38, 40) acting on said pins (130, 132) and at a predetermined fluid pressure level overcoming said resilient means (133, 135) to move said pins, to close said gap and to thereafter provide said input assembly (90) with a delayed reaction force that opposes the input force during a brake application.

4,604,871

OVER-TEMPERATURE WARNING SYSTEM FOR REFRIGERATOR APPLIANCE

Norman H. Chiu, and David A. Schneider, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 17, 1985, Ser. No. 692,081

Int. Cl.[4] G08B *17/00*

U.S. Cl. 62—130 **11 Claims**

1. An over-temperature alarm system for an appliance having a freezer compartment for storing perishable items, said alarm system comprising:

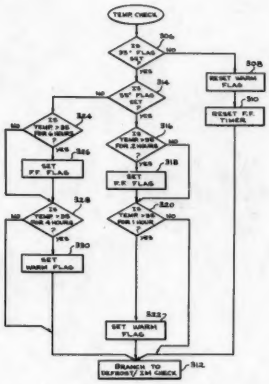
temperature sensing means for sensing the temperature in the freezer compartment;

means responsive to said temperature sensing means operative to detect a first temperature condition when the

sensed temperature is greater than a first reference temperature, and to detect a second temperature condition when the sensed temperature is greater than a second reference temperature greater than said first reference temperature;

timer means for measuring the duration of said first and second temperature conditions;

signal generating means responsive to said timer means operative to generate a first user discernible warning



signal whenever the duration of a first temperature condition exceeds a first relatively long delay time or the duration of a second temperature condition exceeds a second relatively short delay time less than said first delay time; said delay times being selected to be of sufficient duration to avoid warning signals in response to temporary over-temperature conditions likely to occur during normal operation;

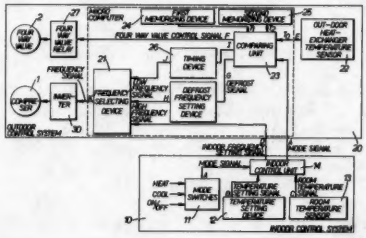
whereby the user is alerted to the existence of an undesirable time/temperature condition in the freezer compartment.

4,604,872

HEAT PUMP TYPE AIR CONDITIONING APPARATUS HAVING A CONTROLLED VARIABLE CAPACITY COMPRESSOR

Koichi Miyazaki, Shizuoka, and Masaya Yamazaki, Fuji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 25, 1985, Ser. No. 695,254
Claims priority, application Japan, Feb. 3, 1984, 59-17088
Int. Cl.[4] F25D *21/06*
U.S. Cl. 62—156 **5 Claims**



1. A heat pump type air conditioning apparatus comprising;

a variable capacity compressor;

a reversing valve;

an indoor heat exchanger;

an expansion device;

an outdoor heat exchanger;

said compressor, said valve, said indoor heat exchanger, said expansion device and said outdoor heat exchanger connected respectively in series, and forming a closed refrigerant circuit operable in a defrost mode of operation wherein heat energy is transferred from said refrigerant to said outdoor heat exchanger;

detecting means for generating an electrical signal when the defrosting mode of operation is completed and the heating mode of operation begins; and

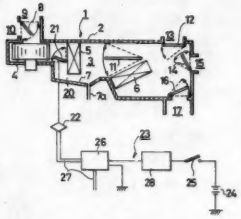
protecting means for controlling said compressor so that said compressor is operated at a predetermined low capacity for a predetermined time interval upon receiving said electrical signal.

4,604,873

AIR CONDITIONING UNIT FOR AUTOMOBILES

Toshio Ohashi, Atsugi, and Yasushi Yamamoto, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1984, Ser. No. 676,930
Claims priority, application Japan, Dec. 1, 1983, 58-227524
Int. Cl.[4] G05D *23/32*; F25D *17/00*
U.S. Cl. 62—158 **7 Claims**



1. An air conditioning unit for automobiles, comprising a casing defining a ventilation duct, an evaporator disposed within said ventilation duct, a water collecting portion formed on the bottom wall of said casing, said water collecting portion collecting the dripping water from said evaporator, a bypass passage, between said evaporator and the bottom wall of said casing, for bypassing said evaporator, a door for opening and closing said bypass passage, and an actuator comprising an operation circuit to operate said door, said operation circuit including a delay circuit interposed therein so as to provide the actuator with a time delay function to open said door to said bypass passage after a predetermined time delay when the air conditioning is stopped after operation, whereby the water collected in the water collecting portion is substantially exhausted from the air conditioning unit before the ambient air passes through said bypass passage.

4,604,874

EVAPORATIVE COOLERS

Frederic F. Seeley, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty Ltd., St. Marys, Australia

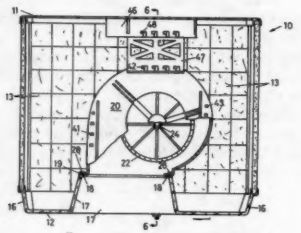
Filed Oct. 23, 1984, Ser. No. 663,772
Claims priority, application Australia, Oct. 25, 1983, PG2041
Int. Cl.[4] F25D *19/00*
U.S. Cl. 62—298 **12 Claims**

1. Improvements in an evaporative cooler of the type wherein a cabinet is provided with a top panel, a bottom panel, four side panels, at least some of said panels being pervious, one of said panels being a discharge panel having surfaces defining an exhaust opening therein, a blower comprising an impeller and a volute housing within the cabinet, means for discharging water over the pervious panels, and a motor coupled for drive to the impeller, comprising:

a flange on the volute, interengaging surfaces on the volute

flange and discharge panel retaining the volute flange in face-to-face contiguity with a surface of the discharge panel,

at least two pairs of volute support means extending outwardly from the volute and circumferentially spaced from each other and from the volute flange,



and spacer means extending into the cabinet from a said panel, and interengaging surfaces on at least one pair of support means and each volute support means retaining one of said volute support means to said spacer means.

4,604,875

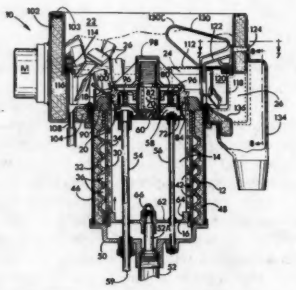
ICE MACHINE

Paul Keller, Coon Rapids, Minn., assignor to Kellex Industries Ltd., Minneapolis, Minn.

Filed Dec. 3, 1984, Ser. No. 677,284

Int. Cl.[4] F25C *1/14*

U.S. Cl. 62—354 **6 Claims**



1. A machine for making ice comprising a tubular ice forming chamber, refrigeration means associated with the chamber to chill the chamber to freezing temperature, a stripper mounted within the chamber for reciprocation along the axis of said chamber to strip the ice formed on the inner surface thereof and move it toward one end of said chamber, a breaker at the end of the chamber toward which the ice is moved by the stripper, said breaker being adapted to engage the ice and break it into pieces as the ice is moved by the stripper, a hopper having a side wall at the end of the chamber adjacent to the breaker to receive pieces of broken ice as they are forced past the breaker by the stripper and a hollow annular conveyor having an open center located in the middle of the hopper and being mounted within the hopper where said pieces of ice accumulate, said conveyor including at least one vertically disposed paddle connected thereto and adapted to move in a circle through the hopper as the annular conveyor is rotated about a central axis within the hopper to convey the ice pieces in a circle within the hopper, said hopper having an outlet port therein in lateral alignment with the paddle for the removal of the ice from the hopper and a drive means connected to the conveyor in proximity to the side wall of the hopper for imparting rotation to the annular conveyor to transport the cracked ice pieces within the hopper toward said outlet port and thereby dispense the ice from the hopper.

4,604,876

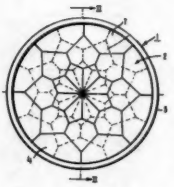
IMITATION GEM

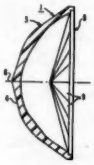
Reinhold Hoffmann, Neue-Bruch-Strasse 2a, 7505 Ettlingen, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,975

Int. Cl.[4] A44C *17/00*

U.S. Cl. 63—32 **4 Claims**





1. An imitation gem having light reflecting and light refracting facets formed thereon, said gem comprising two semi-shells mounted together and formed of transparent material, each with an essentially concave inner surface and an essentially convex outer surface both provided with a multitude of facets, said semi-shells having their concave inner surfaces spaced from one another and provided with a semitransparent light reflecting coating, said semi-shells being identical in shape and arrangement of facets and being angularly displaced with respect to each other by a distance of from one fourth to one half of a facet width.

4. An imitation gem comprising a semi shell formed of transparent material with an essentially concave inner surface and an essentially convex outer surface, both of said inner and outer surfaces being provided with a multitude of facets, a semitransparent, light reflecting coating disposed on said concave faceted inner surface of said semi shell and a cover mounted on said semi shell, said cover having an essentially conical roof-like, inwardly converging inner surface spaced from the concave faceted inner surface of said semi shell, said conical inner surface having facets formed thereon and being coated with a light-reflecting material.

4,604,877

NEEDLE SELECTION DEVICE FOR KNITTING MACHINES

Masatoshi Sawazaki, and Shozo Yorisue, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Hyogo, Japan

Filed Feb. 25, 1985, Ser. No. 705,190

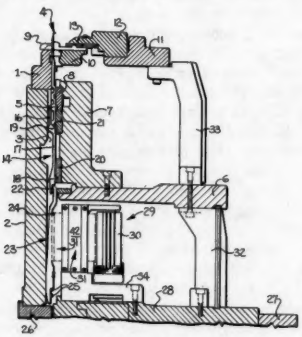
Claims priority, application Japan, Mar. 2, 1984, 59-030745[U]

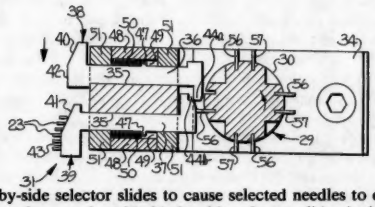
Int. Cl.[4] D04B *9/38, 15/74*

U.S. Cl. 66—224 **10 Claims**

1. A needle selection device for a circular knitting machine including needles supported for vertical movement in slots in a needle cylinder, a pattern jack positioned in each slot in the needle cylinder and beneath each needle, said pattern jacks including spaced selector butts thereon and being operable to

cause said needles to selectively knit, welt and tuck, a pair of side-by-side stacks of selector slides supported for individual horizontal sliding movement between innermost and outermost radial positions relative to said needle cylinder and including inner ends vertically aligned with said selector butts of said pattern jacks, and a single pattern device supported for engagement with the outer ends of said selector slides, said single pattern device being operable to radially position said





side-by-side selector slides to cause selected needles to either knit, welt or tuck, said side-by-side selector slides including engagement portions on their outer ends including a projection at the rear end of one of said selector slides and a cutout at the rear end of the other of said selector slides and adapted to be engaged by said projection so that adjacent pairs of side-by-side selector slides are simultaneously moved inwardly by said pattern butt means engaging and moving inwardly said selector slide including said projection provided thereon.

4,604,878

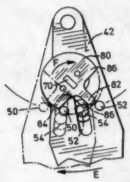
LATCH ACTUATOR CAM OF DOOR LOCKS

Terry J. M. Todd, Willowdale, and Josip Vulakovic, Weston, both of Canada, assignors to Papaiz of Canada Limited, St. Catharines, Canada

Filed Jan. 28, 1985, Ser. No. 695,569

Int. Cl.[4] E05B *65/06*

U.S. Cl. 70—139 **3 Claims**



1. In a door lock of the type having a rotatably mounted cam which has a detent which serves to displace a latching member and to engage a downstream abutment member of a pair of abutment members which are arranged upstream and downstream of a locking member with respect to the direction of rotation of an actuator cam, the abutment members being mounted on a lever arm which is connected to a locking bolt such that rotation of the actuator cam in one direction or the other will cause the detent to displace the locking member and thereafter engage the downstream abutment member to effect movement of the lever arm which in turn effects movement of the locking bolt between an open position and a closed position and to move the downstream abutment member clear of the path of the detent so as to permit the detent to gain access to the locking member when the direction of rotation of the actuator cam is reversed, the improvement of;

first and second abutments formed on the actuator cam and arranged one on either side of the detent so as to engage the upstream abutment member to arrest the movement of the actuator cam after displacement of the downstream abutment member to the position in which it is clear of the path of travel of the detent such that the rotation of the actuator member is restricted to about 90°.

4,604,879

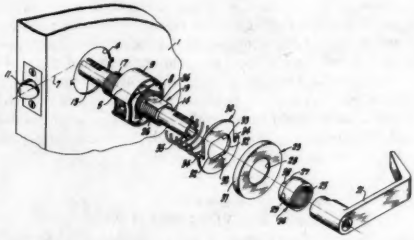
CYLINDRICAL LOCK

Ralph E. Neary, San Francisco, and Scott A. Hull, Burlingame, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 16, 1984, Ser. No. 590,326

Int. Cl.[4] E05B *13/10, 3/00*

U.S. Cl. 70—224 **8 Claims**



8. For use in a cylindrical lock, a hub having threads and having a chordal flat surface, a torque plate having a transversely elongated central opening of greater diameter than the diameter of said hub and adapted to surround said hub, said central opening in part bein defined by a chordal flat surface adapted substantially to abut said chordal flat surface of said hub and said central opening in part being defined by an arcuate surface separated from said threads by a space, and a nut having threads engageable with said threads on said hub and having portions adapted to lie in parts only of said space to leave transverse clearance, said portions having a pair of chordal flat surfaces adapted substantially to abut and shift transversely relative to said chordal flat surface of said opening.

4,604,880

CONTINUOUS EXTRUSION OF METALS

John East, Highworth, and Ian Maxwell, Reading, both of England, assignors to Metal Box Public Limited Company, United Kingdom

Filed Jan. 27, 1984, Ser. No. 574,513

Claims priority, application United Kingdom, Feb. 3, 1983, 8302951; Apr. 12, 1983, 8309836

Int. Cl.[4] B21C *35/02*

U.S. Cl. 72—9 **9 Claims**

1. A continuous extrusion system comprising:

(a) a continuous extrusion apparatus for producing a continuous metal extrusion product;

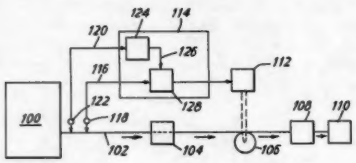
(b) an extrusion product treatment means through which said extrusion product is to be threaded and drawn under tension from said extrusion apparatus, thus effecting a

desired change in one or more predetermined characteristics of said extrusion product;

(c) tensioning means arranged to apply, when the system is in operation, a tension to said extrusion product leaving said treatment means, thus continuously drawing said extrusion product through said treatment means;

(d) a temperature sensing means arranged to sense the temperature of the extrusion product as it leaves the continuous extrusion apparatus and to provide a temperature reference signal dependent upon the sensed temperature of the extrusion product;

(e) a tension sensing means arranged to sense the tension in the length of the extrusion product extending between the



extrusion apparatus and the treatment means, and to provide a tension feedback signal dependent upon the sensed tension in that length of the extrusion product; and

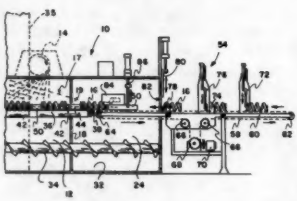
(f) control apparatus arranged for controlling the tensioning means, which control apparatus is responsive to said temperature reference signal and said tension feedback signal and is arranged to control said tensioning means automatically in response thereto in a manner such that the sensed tension in said length of said extrusion product is limited so as not to exceed a predetermined safe value which is less than the yield stress tension of said extrusion product at the sensed temperature at which the extrusion product leaves the extrusion apparatus.

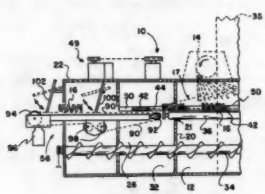
4,604,881

SHOT PEENING MACHINE

Gerold Lienert, Georgetown, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 445,394, Nov. 30, 1982, abandoned.
This application Mar. 11, 1985, Ser. No. 710,723
Int. Cl.[4] B24C *1/10*
U.S. Cl. 72—53 **2 Claims**





1. An improved shot peening machine of the type which includes blast wheel means or the like which is capable of propelling a plurality of shot generally downwardly into a critical blast region of said machine for shot peening a plurality of springs passing therethrough, wherein said improvement comprises:

a housing for said machine including an entrance chamber, an exit chamber, and a blast cabinet therebetween;

said critical blast region being defined by a first edge thereof within said entrance chamber and a second edge thereof within said exit chamber and including the interior of said blast cabinet therebetween;

horizontally extending support means for said springs including a pair of spaced spinner rolls for supporting said springs therebetween, said spinner rolls extending through said blast cabinet and terminating at a first end at a first edge of said critical blast region within said entrance chamber and a second end at a second edge of said critical blast region within said exit chamber;

means for conveying said springs along a peening path on said spinner rolls which said peening path extends from said first end to said second end of said spinner rolls, said means for conveying said springs including a plurality of horizontally extending finger elements which extend transversely of said peening path above said spaced spinner rolls, each of said finger elements being capable of advancing one of said springs along said peening path through said critical blast region, said spinner rolls including a space therebetween free of any means for conveying so that said spaces can be varied without restriction between said spinner rolls to accommodate said springs within a range of different sizes and shapes, and said space can be preselected and fixed to accommodate said plurality of said springs having a particular size and shape,

means for feeding said springs from an exterior of said housing into said entrance chamber to supply said springs to said first end of said spinner rolls; and

means for discharging said springs from said exit chamber to said exterior of said housing as said springs are conveyed by said means for conveying from said second end of said spinner rolls,

whereby said spinner rolls would be subject to wear from said plurality of shot in said critical blast region and require periodic replacement, said spinner rolls would have a minimum overall length needed to support said springs in said critical blast region, and said means for feeding and said means for discharging would be located out of said critical blast region and free of wear by said shot.

4,604,882

FORMING APPARATUS FOR PRODUCTION OF STRANDED CONDUCTOR

Tamotsu Nishijima, and Toshihiro Fujino, both of Numazu, Japan, assignors to Yazaki Corporation, Tokyo, Japan

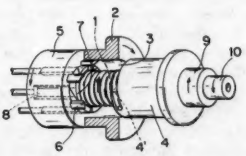
Filed Apr. 25, 1984, Ser. No. 603,700
Claims priority, application Japan, Aug. 12, 1983, 58-146634
Int. Cl.[4] B21C *37/04, 23/00;* B21F *7/00*
U.S. Cl. 72—71 **4 Claims**

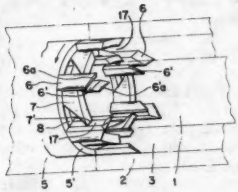
1. An apparatus for producing a stranded conductor, said apparatus including a rotary head, an inner rotating body rotating about a predetermined axis, an outer rotating body rotating coaxially with and surrounding said inner rotating body, an annular spaced defined between said two bodies, said bodies having first and second end portions, and a guide member provided at said first end portion for guiding wire stock into said annular space;

said rotary head being coaxially provided at said second end portion for rotation in a predetermined direction, said rotary head having an axial end face at said second end portion and facing said guide member,

said rotary head comprising:

plural pairs of projections extending axially from said end face, each pair being radially oriented on said end face and including an inner member extending in said annular space adjacent the inner rotating body and an outer member





extending in said annular space adjacent the outer rotating body, said inner and outer members opposing each other with a predetermined gap therebetween; and

cut-forming means provided in the vicinity of said gap.

4,604,883

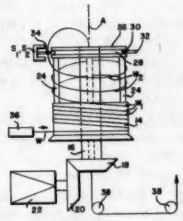
MASS FLOW CONTROL SYSTEM FOR WIRE DRAWING MACHINE

William R. Schaetzke, Shrewsbury, and Ronald W. DuFries, Westboro, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Oct. 17, 1985, Ser. No. 788,745

Int. Cl.[4] B21C *1/10, 1/12*

U.S. Cl. 72—280 **6 Claims**



1. A wire drawing machine having a die and rotating block wherein wire is drawn through said die by said rotating block, said block being driven by a variable speed motor, the thus drawn wire being accumulated as a plurality of windings on the block before being removed therefrom via a guide, the guide being arranged on a carrier which rotates independently of the block about the axis of block rotation when a difference exists between the rates at which wire is wound onto and removed from the block, the improvement comprising: a control system including motion detection means arranged to coact with the carrier in generating electrical signals representative of the direction and speed of rotation of said carrier, and control means associated with said motor and said motion detection means and responsive to said signals for adjusting the rotational speed of said block in order to reach a steady state condition where wire is being wound onto and removed from said block at the same rate, and said carrier remains motionless.

4,604,884

TWISTING APPARATUS OF ROOT CANAL REAMER OR FILE MATERIAL AND METHOD FOR MANUFACTURING ROOT CANAL REAMER OR FILE

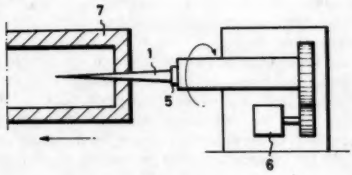
Kanji Matsutani, Takanezawa, Japan, assignor to Matsutani Seisakusho, Japan

Filed Jul. 3, 1984, Ser. No. 627,538

Claims priority, application Japan, Jul. 4, 1983, 58-120268; Dec. 15, 1983, 58-237042

Int. Cl.[4] B21D *11/04*

U.S. Cl. 72—299 **9 Claims**



1. An apparatus for twisting root canal reamer material, the material having a plurality of angular edges and a root portion comprising:

a chuck portion holding a root portion of a reamer material;

a vice having a plurality of vice-claws each of which being pivotally connected to a cylinder and piston means, each having front and side portions, the front portion being planar and capable of pressing the respective angular edges of the reamer material, said vice and chuck being positioned a distance from one another and being oriented to hold said reamer material at spaced positions along its longitudinal axis;

means for rotationally varying the distance between the vice-claws and the chuck portion;

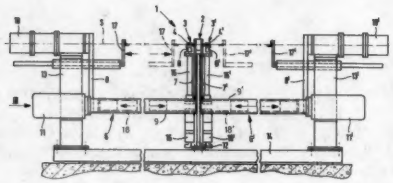
the vice-claws being movable in a plane perpendicular to the longitudinal axis of the reamer in relation to each other and to the reamer material complying with variations in the thickness of the material; and

the vice-claws being positioned so that each vice-claw presses a portion of the front of the adjacent vice-claw.

4,604,885
MACHINE FOR THE BENDING OF STRANDED MATERIAL

Thomas P. Lang, Erbacher Strasse 45, D-6120 Michelstadt, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 594,485
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311766
Int. Cl.[4] B21D *7/022*
U.S. Cl. 72—306 8 Claims



1. A machine for bending elongate material, more particularly a tubular member such as a brake line, a fuel line or the like, said machine comprising:

fixed central clamping means for clamping a central section of an unbent elongate member and to define a fixed elongate member axis;

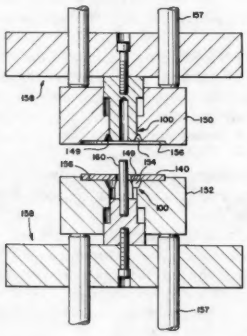
first and second bending heads mounted at respective sides of said clamping means, each said bending head including a bending die having a longitudinal axis, a counterpressure die spaced from said bending die such that a respective end section of the elongate member fits therebetween, and means for rotating said counterpressure die in a bending plane about said longitudinal axis of said bending die, thereby bending the respective end section; and

means for swivelling each said bending head about said elongate member axis independently of said swivelling of the other said bending head, and thereby for independently rotating said bending planes with respect to said elongate member axis.

4,604,886
METHOD AND APPARATUS FOR SINGLE STEP FORMATION OF SPHERICAL RETAINER

John C. McGregor, Jr., c/o Pentaflex, Inc., P.O. Box 1566, Springfield, Ohio 45501

Filed Feb. 28, 1985, Ser. No. 706,997
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—354 6 Claims



1. A method of forming a retainer for a truncated spherical member in a single stroke stamping operation comprising the following steps:

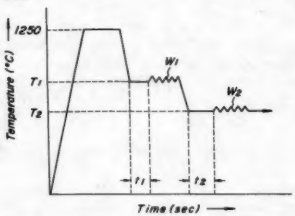
inserting a blank having a cylindrical opening therein between upper and lower tools each comprising a die, a sectored punch and impinging segments, each punch including at least one pair of diametrically opposed sectors of a cylinder, said sectors being separated from one another such that the sectors of each punch can be intermated to form a cylinder, the distal ends of said sectors being spherically contoured; and

compressing said blank between said upper and lower tools to form alternating cylindrical and spherical surfaces into the upper and lower portions of said blank with a cylindrical surface on the upper portion of said blank being opposite to a spherical surface on the lower portion of said blank and a spherical surface on the upper portion of said blank being opposite to a cylindrical surface on the lower portion of said blank, each axially opposed cylindrical and spherical surface being formed on opposite sides of said blank by a sector of the punch of one of the upper or lower tools.

4,604,887
DUPLEX STAINLESS STEEL SEAMLESS PIPE AND A METHOD FOR PRODUCING THE SAME

Hiroshi Ohtsubo, Aichi; Isao Takada, Chita, and Tatsuo Kawasaki, Yotsukaido, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 30, 1984, Ser. No. 676,639
Int. Cl.[4] B21B *3/02*
U.S. Cl. 72—368 2 Claims



1. A method of producing a duplex stainless steel seamless pipe having a composition consisting of, in % by weight, C: not more than 0.03%, Si: not more than 2.00%, Mn: not more than 2.00%, Cr: 20.0–30.0%, Ni: 1.0–9.0%, Cu: not more than 3.0%, Mo: 0.5–5.0%, N: 0.05–0.30%, Al: 0.01–0.10%, S: not more than 0.004%, P: not more than 0.030%, at least one of Ca: $(1-10)\times[\%S]$ and B: 0.0005–0.010%; and the remainder being Fe and incidental impurities by a plug mill process comprising a piercing step by means of a piercing mill, a cross rolling step by means of a cross rolling mill, a rolling step by means of a plug mill, a reeling step by means of a reeler and an outer diameter reducing step by means of a sizer, wherein a billet is pierced in the piercing step under a condition that the billet is kept at a temperature of 1,200°–1,350° C. in its center portion and at a temperature of 1,100°–1,350° C. in its outer surface portion; the cross rolling of the resulting hollow piece is finished at a temperature not lower than 1,100° C. in the cross rolling step; and the cross rolled hollow piece is worked in the plug mill rolling step, in the reeling step and in the outer diameter reducing step under conditions that the equivalent strains which will be caused in the hollow piece in the plug milling rolling step, in the reeling step and in the outer diameter reducing step are kept to not higher than 0.5, not higher than 0.4 and not higher than 0.2 respectively, said equivalent strains being calculated by the following formula (1), and that the total amount of the equivalent strain which will be caused in the hollow piece in the plug mill rolling step and in the reeling step is kept to not higher than 0.6, said total amount of the equivalent strain being calculated by the following formula (2):

$$\bar{\epsilon} = \frac{2}{\sqrt{3}} \sqrt{(\epsilon_t^2 + \epsilon_t \cdot \epsilon_B + \epsilon_B^2)} \quad (1)$$

wherein

$\epsilon_t = \ln (t/t_o)$

$\epsilon_B = \ln (D/D_o)$

t_o, D_o: average wall thickness and average outer diameter of the hollow piece before rolling in each step, respectively

t, D: average wall thickness and average outer diameter of the hollow piece after rolling in each step, respectively; and

$$\bar{\epsilon'} = \frac{2}{\sqrt{3}} \sqrt{(\epsilon_t'^2 + \epsilon_t' \cdot \epsilon_B' + \epsilon_B'^2)} \quad (2)$$

wherein

$\epsilon'_t = \ln (t_p/t_{po}) + \ln (t_R/t_{Ro})$

$\epsilon'_B = \ln (D_p/D_{po}) + \ln (D_R/D_{Ro})$

t_p, t_{po}: average wall thicknesses of the hollow piece after and before rolling by the plug mill, respectively

t_R, t_{Ro}: average wall thicknesses of the hollow piece after and before rolling by the reeler, respectively

D_p, D_{po}: average outer diameters of the hollow piece after and before rolling by the plug mill, respectively

D_R, D_{Ro}: average outer diameters of the hollow piece after and before rolling by the reeler, respectively.

4,604,888

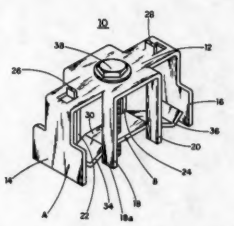
CABLE CLAMP, BODY PORTION THEREFOR AND METHOD OF MANUFACTURING SAME

Michael T. Mayszak, Villa Park, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Division of Ser. No. 638,296, Aug. 6, 1984. This application Jul. 3, 1985, Ser. No. 751,442

Int. Cl.[4] B21D *53/36*

U.S. Cl. 72—379 **3 Claims**



1. The method of manufacturing from a strip of resilient sheet metal a body portion of an electrical cable clamp of the type which includes a jaw movable with respect to said body portion, comprising the steps of:

(a) bending the ends of the strip through an angle of essentially ninety degrees to thereby produce a substantially U-shaped configuration having a flat base and planar end walls extending at generally right angles to opposed margins of said base;

(b) shearing each of said end walls and portions of said base along lines just below and parallel to one edge of said generally U-shaped configuration said shearing continuing inwardly to a distance defining a central uncut area of said base so as to produce parallel pairs of elements extending in directions opposite from said central uncut area; and

(c) bending those of said elements which are above said lines such that a first pair of arms are formed spaced intermediate along said one base edge, said arms being substantially parallel to each other and said end walls and extending generally at right angles to said base, each of said arms forming with the associated one of said end walls a first U-shaped channel,

whereby said jaw interfits below said arms and said jaw having a pair of symmetrically disposed concave wings having an apex portion and locationally mounted adjacent said end walls and slidably contiguous with respect to said end walls for preventing pinching of said cables between said wings and end walls, and said clamp of the type also including means to draw said jaw into compressive engagement with cables nested within said first channel.

4,604,889

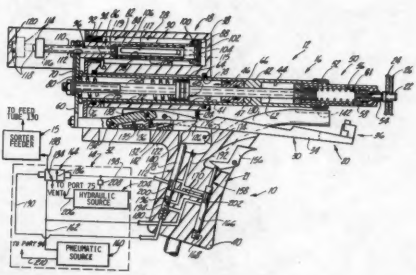
AUTOMATED INSTALLATION TOOL FOR BLIND FASTENERS

Boris P. Sukharevsky, Fullerton, Calif., assignor to Huck Manufacturing Company, Irvine, Calif.

Filed Dec. 27, 1984, Ser. No. 686,891

Int. Cl.[4] B21D *9/05*

U.S. Cl. 72—391 **32 Claims**



1. In a portable tool for setting blind fasteners including a pin and a sleeve by applying a relative axial force between the pin and sleeve, said tool comprising: fastener installation means actuable for applying the relative axial force between the pin and sleeve, said installation means including a nose assembly having an open, forward end and adapted to receive the fastener at said forward end and to apply the relative axial force to the fastener, fastener loading means operable for automatically loading fasteners into said nose assembly and comprising a pivotal arm pivotably actuable to a load position locating the fastener at said forward end of said nose assembly, said pivotal arm being generally elongated and extending in a direction generally parallel to the line of travel of said reciprocable movement, and actuating means operatively connected with said fastener loading means and said installation means for actuating said pivotal arm to pivot about an axis transverse to said line of travel to said load position and for causing relative reciprocable movement between said loading means and said installation means whereby the fastener held by said loading means will be inserted into said open end of said nose assembly as said nose assembly and said loading means are moved towards each other.

4,604,890

COMPRESSION TOOL

William C. Martin, Fairview, Pa., assignor to Teledyne Penn-Union, Edinboro, Pa.

Continuation-in-part of Ser. No. 578,999, Feb. 14, 1984, abandoned, which is a continuation of Ser. No. 347,014, Feb. 8, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,599

Int. Cl.[4] B21J *9/18*

U.S. Cl. 72—453.16 **16 Claims**

4. A compression tool for compressing a generally tubular workpiece comprising: a tool head, a die set including fixed

and movable die means mounted in said tool head, said movable die means intermeshing with said fixed die means for surroundingly engaging and compressing said tubular workpiece, said movable die means being continuously variably positionable relative to said fixed die means for defining an opening of variable size between a predetermined minimum opening and a predetermined maximum opening for selectively compressing relatively large and relatively small workpieces over a corresponding range of sizes by the same said die set, fluid operated drive means for driving said movable die means towards said predetermined minimum opening to compress a preselected size of workpiece; and fluid pressure control means including a manually adjustable member readily accessible and in view to an operator in on-the-job field use for preselecting and presetting the maximum pressure of the fluid supply to said fluid operated drive means for the preselected size of work-

piece to be compressed and thereby controlling the force applied by the drive means to the die means and the compressive force applied by the die means to the selecteu size of workpiece within the range of sizes which may be accommodated by the same said die set; wherein said manually adjustable member protrudes from the tool to be accessible to an operator, and wherein said fluid operated drive means includes a fixed handle and a movable handle movably mounted to said fixed handle to define a lever, and further including mounting means coupled with said fixed handle for mounting said manually adjustable member to protrude therefrom substantially without interferring with the pivotal motion of said movable handle relative to said fixed handle; and wherein said mounting means comprises a rotatable shaft protruding from a free outer end portion of said fixed handle and said adjustable member comprises a knob coupled with said shaft.

4,604,891

REFERENCE PRESSURE DEVICES FOR CALIBRATING PRESSURE-MEASURING INSTRUMENTS

George E. Sgourakes, Mills; John P. Angelosanto, North Attleboro, and Barry T. Malloy, Norton, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

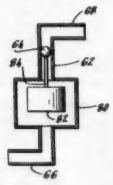
Filed Oct. 17, 1984, Ser. No. 661,806
Int. Cl.[4] G01L *27/00*
U.S. Cl. 73—4 R **29 Claims**

1. In a pressure measuring instrument of the type including a sealed interior pressure chamber containing a fill-liquid and having diaphragm means to apply thereto an input pressure signal to be measured, said instrument further including sensing means responsive to the input pressure signal applied to said fill-liquid to produce a corresponding output signal;

that improvement for calibrating the span of the instrument comprising:

a reference pressure device forming an integral part of said instrument and including a cavity formed as part of said interior chamber;

an object in said cavity sized to provide a close fit with the cavity walls so that the object when moved by the force of



gravity through the cavity will produce a reference pressure signal for said instrument; and

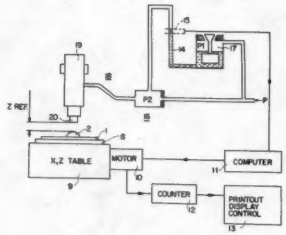
a weight in said chamber coupled to said object to augment the gravity force on said object and thereby increase the magnitude of said reference pressure signal.

4,604,892

DEVICE FOR THE AUTOMATIC CONTACTLESS MEASUREMENT OF THE VOLUME OF A LAYER DEPOSITED ON A SUBSTRATE

Michelle Carreras, 81 rue de Paris, St. Rémy les chorreuse 78470, France

PCT No. PCT/FR83/00246, § 371 Date Jul. 27, 1984, § 102(e) Date Jul. 27, 1984, PCT Pub. No. WO84/02394, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 8, 1983, Ser. No. 641,965
Claims priority, application France, Dec. 10, 1982, 82 20723
Int. Cl.[4] G01B *13/02*
U.S. Cl. 73—37.5 **10 Claims**



1. In a process utilizing measurement of gas pressure at the outlet end of a gas jet for measuring the average topological thickness of a strip of wet electrically resistive material carried on a flat, rigid, substrate, wherein the gas pressure is alternately applied onto the top surface of the strip of wet electrically resistive material and the surrounding flat surface of the substrate; the improved process comprising the steps of:

providing a single shaped gas jet discharge outlet that is homothetic and smaller to the width and length of the strip of wet electrically resistive material to be measured;

providing a jet of gas issuing from said outlet at a measureable first discharge pressure and directed at the surface of the deposit on the substrate;

positioning said homothetic shaped gas jet outlet opposite said deposit on said substrate to direct said jet against the entire homothetically-included surface of said deposit, so that said measureable first discharge pressure represents a measured distance between the gas jet outlet and the opposed surface deposit of wet resistive material integrated over all of the thickness variations occurring in the portion of the layer of deposit against which the jet is directed, while spacing said gas jet outlet to maintain the

issuing gas pressure at a substantially constant reference pressure value;

establishing a reference spacing between said outlet and the facing surface of the deposit as a first reference distance associated with said measurable first pressure;

positioning said gas jet outlet to direct said jet at a region of said flat, rigid substrate surface free of a deposit thereon, so that a second gas pressure is substantially related to the distance from said outlet to the substrate surface free of deposit;

adjusting the distance between the substrate surface and the jet so that said outlet gas pressure is equal to said first reference pressure value, said adjusted distance being proportional to the distance from the gas jet discharge outlet to the average topological thickness of said deposit.

4,604,893

LEAK DETECTOR

Frank J. Senese, Hickory Hills, and Lloyd A. Baillie, Homewood, both of Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 340,439, Jan. 18, 1982, Pat. No. 4,453,400. This application Jun. 1, 1984, Ser. No. 616,042

The portion of the term of this patent subsequent to Jan. 18, 1999, has been disclaimed.

Int. Cl.[4] G01M *3/38;* G01F *23/10*

U.S. Cl. 73—49.2 **7 Claims**

1. A method for detecting small leaks in a tank storing a liquid, said tank having a float means positioned in contact with said stored liquid, a detector means and a signal means in fixed relationship to each other, said float means moving in relationship to the level of said stored liquid and having a reservoir means for holding a measuring medium, said measuring medium being capable of modulating a signal characteristic representative of the position of said detecting means, comprising sealing said float means to prevent the condensation of vapors within said float means, emitting a signal having a characteristic from said signal means into said measuring medium, modulating said signal characteristic by an amount which varies with the changes in the location of said float means, detecting said modulated signal characteristic, and producing a response signal directly related to said detected characteristic, wherein changes in said response signal are indicative of small leaks in said tank.

4,604,894

SYSTEM FOR MEASURING BLEEDING TIME IN VITRO

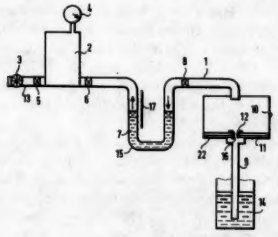
Michael Kratzer, Leopoldstr. 56, D-8000 München 40, Fed. Rep. of Germany, and Gustav V. R. Born, 10 Woodland Gardens, Muswell Hill, London N10 3UA, England

Filed Dec. 20, 1983, Ser. No. 563,454

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247815

Int. Cl.[4] G01N *11/04, 33/48*

U.S. Cl. 73—64.1 **18 Claims**



1. A system for measuring bleeding time in vitro, in which the blood can be passed under pressure through a porous element, the system being provided with a system for measurement of the resulting volumetric flow, comprising:

an aperture in said porous element; and

a chamber in which said porous element is arranged such that said blood moves substantially through said aperture and substantially no blood moves laterally through said porous element.

4,604,895

HOT WIRE ANEMOMETER

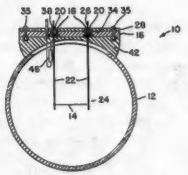
Dennis W. Watkins, King County, Wash., assignor to Air Sensor Inc., Seattle, Wash.

Continuation of Ser. No. 490,560, May 2, 1983, Pat. No. 4,523,461. This application Mar. 12, 1985, Ser. No. 711,090

The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.

Int. Cl.[4] G01F *1/68*

U.S. Cl. 73—204 **10 Claims**



8. An electronic anemometer for measuring air mass flow in a conduit, comprising:

a length of temperature-dependent resistive wire;

a circuit board for holding at least a portion of the anemometer electronic circuitry;

a rigid support member, said circuit board being attached to said member; and

a pair of electrically conductive, resilient posts capable of withstanding the elevated operating temperatures encountered when the anemometer is operating, each of said posts having a wire-supporting end portion fixedly connected to said wire, said end portions being spaced apart and positionable in the conduit, and biased away from each other to hold said wire under tension, each of said posts further having a remote end portion fixedly held by said support member, said remote end portions being electrically connected to the electronic circuitry.

4,604,896

ROTOR BLADE TEST APPARATUS

Edwin C. Taschner, Scottsdale, Ariz., and Edward M. Myzska, San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 24, 1985, Ser. No. 737,377

Int. Cl.[4] G01H *3/08, 13/00*

U.S. Cl. 73—583 **7 Claims**

1. A rotor blade test apparatus for the J-69 engine comprising in combination:

a test fixture for cradling a plurality of rotor blades including the rotor blade to be tested,

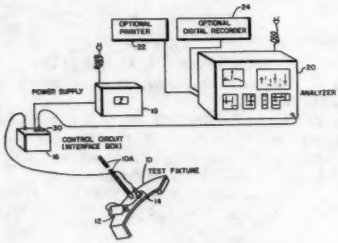
a solenoid means for striking said rotor blade, said striking solenoid means mounted on said test fixture at a predetermined distance from said rotor blade, said solenoid striking being actuated to strike said rotor blade to produce an audio signal,

means for receiving audio signals, said audio receiving means mounted on said test fixture to receive said audio signal,

an interface control means for providing operating voltages to said striking solenoid and said audio receiving means,

said interface control means including a means for activating said striking solenoid, and a means for signal coupling, and,

a means for frequency analyzing an audio signal, said frequency analysing means operatively connected to said



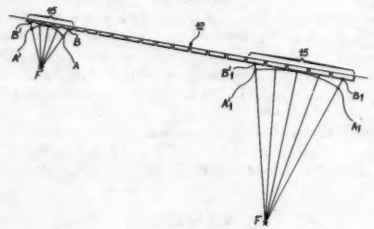
interface control means, said frequency analyzer means receiving said audio signal from said audio receiving means from said signal coupling means in said interface control means, said frequency analyzing means analyzing said audio signal and providing a frequency waveform which is representative of said audio signal.

4,604,897

MULTITRANSDUCER ULTRASONIC PROBE WITH TRANSDUCERS OF DIFFERENT SIZES

Robert Saglio, Antony, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 30, 1984, Ser. No. 636,003
Claims priority, application France, Aug. 1, 1983, 83 12641
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—626 **14 Claims**



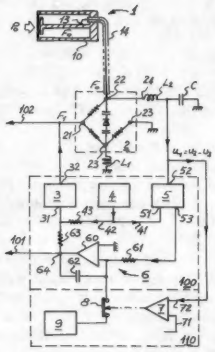
1. An ultrasonic probe for transmitting ultrasonic waves in the direction of an object having points of variable depth to be inspected and for receiving the ultrasonic waves reflected from said points in response to impingement of said transmitted ultrasonic waves thereon, comprising a first plurality of M juxtaposed ultrasonic transducers arranged along a first line and directed toward said object, M being an integer, and control means for selectively activating successive groups of m juxtaposed transducers from among said first plurality to form successive zones of activation, where $m < M$ and m is an integer, and for progressively displacing said zone of activation along said first line in a predetermined direction during successive activations for accomplishing scanning of said object, said displacement having a magnitude corresponding to the total dimension along said first line of an integral number of juxtaposed transducers, wherein each of said first plurality of transducers has a different dimension along said first line and said transducers of said first plurality are arranged in order of increasing dimension, said dimension along said first line being selected such that a predetermined redundancy rate is attained during scanning of said object, which redundancy rate is substantially independent of the depth of said point to be inspected, said redundancy rate being defined as the number of successive activations during which said point is impinged upon by said transmitted ultrasonic waves.

4,604,898

PRESSURE MEASURING DEVICE

Christian Gohin, Magny, and Henri Leblond, Versailles, both of France, assignors to Badin Crouzet, Chateaufort, France

Filed Oct. 16, 1984, Ser. No. 661,320
Claims priority, application France, Oct. 21, 1983, 83 16767
Int. Cl.[4] G01L *9/12*
U.S. Cl. 73—701 **6 Claims**



1. A pressure measuring device, comprising:

at least one sensor having a resonating cavity, said cavity comprising a deformable wall means, whereby deformation of said wall means, responsive to a pressure to be measured, results in a variation of a capacity of said resonating cavity and a resonance frequency thereof,

an electronic user circuit comprising an impedance bridge,

a coaxial cable for connecting said sensor to said user circuit, said coaxial cable connecting said sensor in a leg of said bridge,

an oscillator connected to said bridge and having a frequency different from said resonance frequency of said sensor to result in a standing wave rate in said coaxial cable in accordance with a frequency difference between said frequency of said oscillator and said resonance frequency, and

a servo control for controlling said oscillator to cause a mean frequency of the oscillator to be equal to said resonance frequency of said sensor.

4,604,899

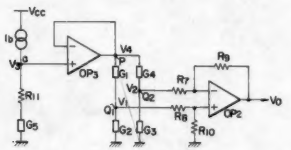
SEMICONDUCTOR-TYPE PRESSURE TRANSDUCER

Kazuji Yamada; Hideo Sato, both of Hitachi; Kanji Kawakami, Mito; Kazuo Kato, Ibaraki, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1984, Ser. No. 597,753
Claims priority, application Japan, Apr. 6, 1983, 58-59307
Int. Cl.[4] G01L *9/04, 19/04*
U.S. Cl. 73—708 **6 Claims**

1. A semiconductor-type pressure transducer comprising a bridge circuit including a plurality of gauge resistors at least one of which has a resistance which varies with an external force, an amplification circuit connected to an output of said bridge circuit for amplifying the output of said bridge circuit, and a drive power circuit connected to a power source terminal of said bridge circuit and connected between first and second potential voltage levels for supplying a drive voltage to said bridge circuit, wherein said drive power circuit includes a

resistor coupled in series between said first and second potential voltage levels and having the same temperature characteristic as that of the gauge resistors for correcting said drive



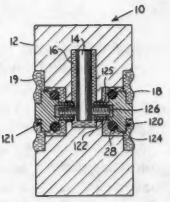
voltage correspondingly to temperature variation of the gauge resistors so as to cancel the effect of the temperature change of the bridge circuit on the amplification factor of the amplification circuit.

4,604,900

ADHESIVE JOINT FOR DIAPHRAGM TO SENSOR CONNECTION IN PRESSURE TRANSDUCERS

James K. Knudsen, South Euclid; Allen C. Koller, Hamilton; Eugene Skuratovsky, Mayfield Hts., and Gary S. Thomas, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 5, 1984, Ser. No. 668,460
Int. Cl.[4] G01L *7/08*
U.S. Cl. 73—716 **1 Claim**



1. In a pressure transducer having a body, a sensor beam fixed to the body within a first cavity formed therein, a diaphragm attached to a side of said body over a second cavity in communication with said first cavity, and a shaft assembly connecting said diaphragm and the sensor beam, the improvement wherein said shaft assembly comprises:

a sensor post attached to said sensor beam and having a free end;

an overpressure stop member having an extended hollow cylindrical portion spaced away from and in surrounding relation to said sensor post and attached to said diaphragm; and

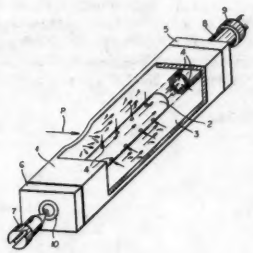
epoxy rigidifying material that is received in the space between said sensor post and said extended hollow cylindrical portion of said overpressure stop member for connecting said sensor post and said overpressure stop member.

4,604,901

HYDRAULIC PRESSURE RECEIVER

Bruno Kägi, Meilan, Switzerland, assignor to St Sensortechnik AG, Chur, Switzerland

PCT No. PCT/CH84/00013, § 371 Date Sep. 20, 1984, § 102(e) Date Sep. 20, 1984, PCT Pub. No. WO84/02977, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 30, 1984, Ser. No. 662,296
Claims priority, application Switzerland, Jan. 31, 1983, 527/83
Int. Cl.[4] G01L *7/08*
U.S. Cl. 73—731 **11 Claims**



1. A hydraulic pressure receiver comprising:

an elongated elastically deformable housing responsive to external force applied thereto and connectable to a pressure evaluation device;

a rigid tube longitudinally traversing said housing and defining therewith a closed annular space around said tube;

a plurality of radial bores formed in said tube in an array extending the length of said housing and connecting the interior of said tube with said space;

a hydraulic fluid contained in said annular space and said tube; and

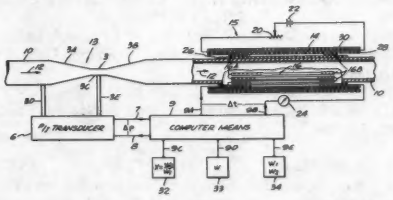
means at one end of said tube for the connection thereof to said pressure evaluation device whereby the application of said force to said housing generates an increase in pressure within said space, which is transmitted to the interior of said tube by said bores and is detected by said device.

4,604,902

MEANS AND TECHNIQUES USEFUL IN MASS FLOWMETERS FOR MULTIPHASE FLOWS

Cullen M. Sabin, Solana Beach, and Heinz F. Poppendiek, La Jolla, both of Calif., assignors to Geoscience Ltd, Solana Beach, Calif.

Filed Oct. 24, 1984, Ser. No. 664,231
Int. Cl.[4] G01F *1/44, 1/68*
U.S. Cl. 73—861.04 **6 Claims**



1. In a two-component flow meter, the combination including:

means defining a flow path for a two-component mixture;

means in said path restricting flow of said mixture and pro-

ducing an accompanying differential pressure between spaced regions of said path;

means for heating said mixture as it flows from an upstream region to a downstream region to produce a differential temperature between said upstream and downstream regions; and

means jointly responsive to said differential pressure and to said differential temperature for evaluating a characteristic of each component of said two-component mixture.

4,604,903

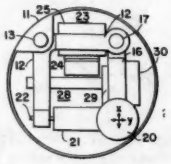
TWO-AXIS, SELF-NULLING SKIN FRICTION BALANCE

Ping Tcheng, Norfolk, and Frank H. Supplee, Jr., Hampton, both of Va., assignors to The United States of America as represented by the Administrator, National Aeronautics & Space Administration, Washington, D.C.

Filed Feb. 28, 1985, Ser. No. 706,681

Int. Cl.[4] G01L *5/16*

U.S. Cl. 73—862.04 **9 Claims**



9. A method for measuring the skin friction forces along two axes on a sensing surface comprising the steps of:

independently pivoting a sensing plane surface back or forth about a first pivot point along a first axis in the sensing plane surface in response to a skin friction force along said first axis;

independently pivoting said sensing plane surface back or forth about a second pivot point pivotally connected to the first pivot point along a second axis in the sensing plane surface in response to a skin friction force along said second axis;

forcing said sensing plane surface back to its zero position along said first axis in response to any movement along said first axis;

forcing said sensing plane surface back to its zero position along said second axis in response to any movement along said second axis; and

processing the forces applied to the sensing plane surface to move it back to its zero positions to obtain the skin friction forces along said first and second axes.

4,604,904

SENSOR FOR THE DETECTION OF RANDOM SIGNALS WHICH ARE SUITABLE FOR CORRELATIVE SIGNAL PROCESSING

Robert Massen, Radolfzell, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

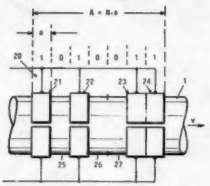
Filed Sep. 20, 1983, Ser. No. 533,989

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235750

Int. Cl.[4] G01F *1/712, 1/74*

U.S. Cl. 73—861.06 **6 Claims**

1. Sensor for the detection of random signals from a process in motion relative to the sensor, said signals being suitable for correlative signal processing, in particular for the purposes of correlative measurement of velocity or running time, said sensor having a total aperture sensitive to a parameter characteristic for the process in motion, said total aperture being subdivided into aperture segments separated by gaps which are not sensitive to said parameter of the process in motion, said aperture segments and gaps being arranged along the direction



of motion according to a binary coding which results in a time-compressed signal upon correlative reception.

4,604,905

MEASURED-VALUE SENSORS FOR MAGNETIC-INDUCTIVE FLOWMETERS

Kristian Rademacher-Dubbick, Duisburg, Fed. Rep. of Germany, assignor to Rheometron A.G., Basel, Switzerland

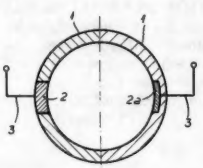
PCT No. PCT/EP83/00351, § 371 Date Sep. 17, 1984, § 102(e) Date Sep. 17, 1984, PCT Pub. No. WO84/02976, PCT Pub. Date Aug. 2, 1984

PCT Filed Dec. 30, 1983, Ser. No. 653,217

Claims priority, application European Pat. Off., Jan. 18, 1983, 83200069.6

Int. Cl.[4] G01F *1/58*

U.S. Cl. 73—861.12 **5 Claims**



1. In a magnetic-inductive flowmeter wherein the flow of a conductive material is measured, and having a measured-value sensor traversed by the conductive material, the improvement wherein said measured-value sensor is an electrically insulating ceramic tube having a pair of electrodes formed by electrically conductive ceramic material fused in said tube and having surfaces lying along an inner surface of said tube for contact with said material, and means connected to said electrodes enabling said electrodes to measure said flow, said tube being composed of silicon nitride and said electrodes being composed of silicon carbide.

4,604,906

FLOWMETER

Thomas J. Scarpa, 6481 Rte. 6N West, Edinboro, Pa. 16412

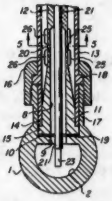
Filed Sep. 24, 1984, Ser. No. 653,301

Int. Cl.[4] G01F *1/28*

U.S. Cl. 73—861.74 **8 Claims**

1. A flowmeter comprising a body having a passageway for fluid to be measured, a tubular body having its inner end open to said passageway and sealed to said first body and having its outer end closed, a rod fixed to the outer end of the tubular body and having its inner end extending to said passageway, an airfoil vane in said passageway and fixed to the inner end of

said rod and oriented to produce a force on said rod transverse to the direction of fluid flow, said tubular body having a section constructed to be flexed by said force, and strain gage means for sensing the flexing of said section.



4,604,907
REDUCTION GEAR DEVICE FOR A COAXIAL TYPE STARTER

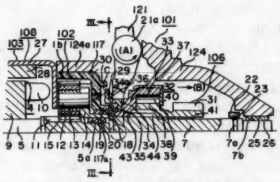
Akira Morishita, and Kyoichi Okamoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1984, Ser. No. 669,080

Claims priority, application Japan, Nov. 7, 1983, 58-172139[U]

Int. Cl.⁴ F02N *15/06*

U.S. Cl. 74—7 E **7 Claims**



1. In a coaxial type starter having a starter motor including a motor shaft and a starter pinion mounted on an output shaft coaxial with said motor shaft, a reduction gear device comprising:

reduction gear means associated with said motor shaft and said output shaft for tarnsferring rotation of said motor shaft to said output shaft with a speed reduction ratio;

annular stationary frame means at least partially enclosing said reduction gear means;

at least one through hole formed in a portion of said machine frame to permit air flow through said machine frame; and

labyrinth sealing means for preventing the entry of dust into said machine frame via said through hole, said sealing means comprising projections formed on said machine frame on two sides of said through hole, and a ring element positionable between said projections and adjacent said through hole.

4,604,908
TRANSFER CASE PLANETARY WITH POWER TAKE-OFF

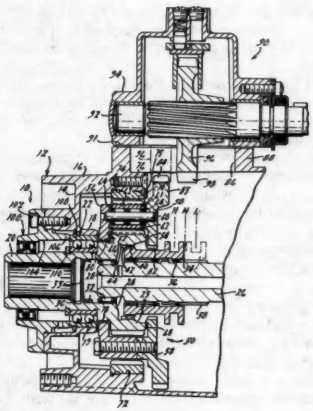
Courtney F. Dolan, Syracuse, N.Y., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 18, 1984, Ser. No. 662,104

Int. Cl.⁴ F16H *37/8, 3/44, 57/10*

U.S. Cl. 74—15.88 **1 Claim**

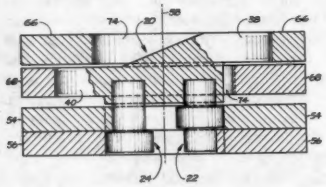
1. In a transfer case apparatus including a housing having an end wall defining an axial opening; said housing having outer wall means extending in a first axial direction from said end wall, axial bearing means journally supporting an input shaft in said end wall opening, said input shaft having one end terminating within said housing in an annular end flange portion joined by an intermediate stepped radially extending flange portion, said input shaft annular end flange portion defining an integral sun gear having oppositely facing transverse extending shoulders, an output shaft journally supported in said housing, said output shaft having a clutch collar axially slidable thereon by means of collar internal splines engaged with external splines on said output shaft, said input shaft having an axial counter-bore formed on said input shaft annular end flange, internal clutch tooth formed in said input shaft counter-bore, external clutch teeth formed on said clutch collar slidably engageable with said input shaft counterbore internal teeth when said clutch collar is moved axially outboard into a high-range drive mode, a helical planetary gear assembly comprising a carrier having outward and inboard axially spaced rings defining inner opposed faces and supporting a plurality of planet gears therebetween, said outboard ring formed with an axial bore encircling said intermediate flange portion for journalled rotation thereon, external bearing means interposed between the inner opposed faces of said rings and their associated sun gear transverse shoulders whereby said planet carrier is axially aligned in a radially floating manner on said input shaft, said wall means having a counter-bore formed therein concentrically supporting an annulus gear, said annulus gear having internal helical gear teeth in meshing relation with said planetary gears, said carrier inboard ring formed with power take-off gear teeth extending radially a predetermined distance beyond said annulus gear, said outer wall means having an aperture therein radially aligned with said inboard ring power take-off gear teeth, mounting means on said outer wall means for supporting a power take-off gear box thereon including an input gear with spur teeth rotatably supported on an axially extending take-off shaft disposed parallel to said transfer case input shaft, a portion of said input gear adapted to extend through said aperture for axial travel on said take-off shaft input gear spur teeth into selective meshing engagement with said inboard ring output spur gear teeth, said inboard ring including an axial bore encircling said clutch collar, said inboard ring axial bore having internal spur gear teeth formed thereon such that when said clutch collar is moved axially inboard its external clutch teeth slidably engage said inboard ring internal spur teeth providing a low-range drive mode, whereby said carrier inboard ring operative for transmitting either a high-range or a low-range drive mode to said take-off shaft upon selective shifting of said clutch collar.



4,604,909
CAM-FOLLOWER TRANSFER MECHANISM FOR CONTROLLING RELATIVE ROTATIONAL MOVEMENT

James E. Marson, 9301 Interlake Ave. N., Seattle, Wash. 98103

Filed Apr. 8, 1985, Ser. No. 721,058
Int. Cl.[4] F02B *53/00*; F04C *2/00*; F16H *35/02*
U.S. Cl. 74—63 13 Claims



1. Transfer mechanism for controlling the rotational movement of one rotary means relative to the rotational movement of a second rotary means, comprising in combination:

first rotary means having a first axis;

second rotary means rotatable about said first axis;

motion transmitting means including a motion transmitting member;

first joint means having a second axis and located at one end of said motion transmitting member for pivotally connecting said motion transmitting member to said first rotary means;

second joint means having a third axis and located at the other end of said motion transmitting member for pivotally connecting said motion transmitting member to said second rotary means;

said second axis and said third axis both being perpendicular to the longitudinal center line of said motion transmitting member, equidistant from the mid-point of said longitudinal center line, parallel to said first axis, and spaced apart from said first axis and from each other;

first follower means having a fourth axis, said fourth axis being spaced apart from said first, second, and third axis;

second follower means having a fifth axis, said fifth axis being spaced apart from said first, second and third axis;

said first and said second follower means both being substantially cylindrical about their respective axes and being of equal diameter;

said first and said second follower means being mounted upon said motion transmitting member with their respective axes being parallel to said first axis and perpendicular to the longitudinal center line of said motion transmitting member, said axes of said first and second follower means being spaced apart from each other, equidistant from said mid-point of said longitudinal center line of said motion transmitting member, and intermediate between said mid-point and said second or said third axis, respectively;

guide means for receiving and cooperating with said first and second follower means, said guide means having a contour being defined by a plurality of segments of a circle, said circle having a radius equal to the sum of the radius of said follower means plus the distance between said fourth axis and said fifth axis, said circle segments together forming a closed path surrounding said first, fourth, and fifth axes and also containing the centerpoints of said circle segments;

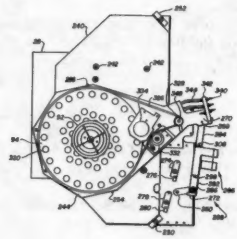
said center points of said circle segments all being radially spaced an equal distance from said first axis, and uniformly spaced apart about said first axis, such that a straight line bisecting opposite circle segments will pass through the center points of said segments and through said first axis;

said guide means and said follower means causing said motion transmitting member to firstly angularly rotate about said fourth axis, and then to secondly angularly rotate about said fifth axis, with the pivot point of said angular rotation continuing to alternate between said fourth and fifth axes whereby said motion transmitting member, and through said joint means, alternately rotates said second rotary means at speeds which are relatively faster than, and then relatively slower than, said first rotary means during each revolution of said first rotary means.

4,604,910
APPARATUS FOR ACCURATELY POSITIONING AN OBJECT AT EACH OF TWO LOCATIONS

Curt H. Chadwick, Los Altos, and Anil A. Desai, San Jose, both of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Feb. 22, 1984, Ser. No. 582,585
Int. Cl.[4] F16H *21/44, 21/54, 25/18*
U.S. Cl. 74—96 7 Claims



1. Apparatus for accurately positioning an object at either one of two fixed locations and rapidly moving the object therebetween, comprising;

means forming a base;

horizontal guide means mounted to said base and defining a predetermined slide path;

slide means supported by said horizontal guide means and adapted to move along said slide path and to carry said object between two fixed positions, said slide means including a horizontally extending portion disposed above said guide means and adapted to support an object mount;

drive means for rapidly moving said slide means in opposite directions along said path with sinusoidally varying velocity so that the velocity of said slide means is maximum midway between said fixed positions and is close to zero when the carried object reaches each said fixed position; and

means for accurately limiting the travel of said slide means so that the carried object is accurately located at each of said two fixed positions.

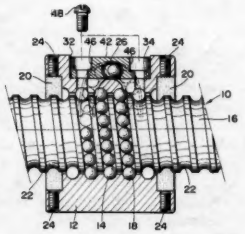
4,604,911
RECIRCULATING-BALL ROTARY-TO-LINEAR CONVERTER WITH AN IMPROVED BALL RETURN GUIDE

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 465,645, Feb. 10, 1983. This application Nov. 25, 1985, Ser. No. 801,394
Claims priority, application Japan, Feb. 26, 1982, 57-28751
Int. Cl.[4] F16H *27/02, 1/18, 1/20*
U.S. Cl. 74—424.8 R 1 Claim

1. In a rotary-to-linear converter for translating rotary motion into rectilinear motion, comprising a ball nut mounted on a worm via a plurality of antifriction balls rollably engaged between an internal helical groove in the ball nut and an external helical groove in the worm, a tubular ball return guide providing a return path for the balls from one end of the ball nut to the other and having an arcuate shape with a constant radius, the opposite end portions of the ball return guide being received in a pair of openings formed through the ball nut in axially and circumferentially spaced positions thereof, each opening in the ball nut composed essentially of a first portion

of semicircular cross section extending straightly in a tangential direction from a cylinder bounded within the ball nut; a second portion of semicircular cross section curving away from the first portion as it extends outwardly from the ball nut the improvement wherein the ball nut has rectangular recess formed in the outside of the ball nut so as to provide a flat



surface; a clamp is attached to the flat surface of the ball nut for fimly retaining the ball return guide in place thereon; and the ball guide clamp has a channel-shaped groove cut diagonally in its bottom surface, into which groove is closely fitted that part of the ball return guide which projects outwardly of the ball nut.

4,604,912

STEERING WHEEL

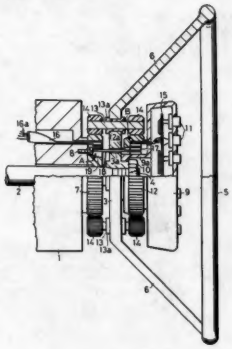
Hiroshi Sugita, Ichinomiya, and Tetsushi Hiramitsu, Kasugai, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugaigun, Japan

Filed Feb. 24, 1984, Ser. No. 583,266

Claims priority, application Japan, Feb. 25, 1983, 58-27527[U]

Int. Cl.[4] B62D *1/04*

U.S. Cl. 74—484 R **5 Claims**



1. A steering wheel assembly for a vehicle having electrically-controlled accessories,

said steering wheel assembly comprising:

a tubular stationary steering column having an end constructed and arranged to be presented towards a vehicle driver;

a steering shaft supported for rotation about its own longitudinal axis, said steering shaft extending longitudinally within said steering column and having a portion protruding out of said end of said steering column;

steering wheel boss plate means provided in said protruding portion of said steering shaft;

a steering ring secured by spoke means to said boss plate means, said steering ring being constructed and arranged to be grasped and rotated by the vehicle driver for correspondingly turning the steering shaft;

a pad disposed at least generally centrally of said steering ring, said pad mounting at least one switch means for operating an electrically-controlled accessory of the vehicle;

means journalling the pad with respect to the steering wheel boss plate means so that the steering wheel boss plate means is free to rotate angularly relative to the pad as the steering wheel is turned, but restraining axial movement of said pad longitudinally of said steering shaft, said journalling means disposing said pad so that said switch means mounted thereon is arranged to confront the vehicle driver;

first sun gear means stationarily provided on said steering column in the vicinity of said end thereof, surrounding said steering shaft;

second sun gear means fixed to said pad;

said first and second sun gear means being coaxially arranged and confronting one another with said boss plate means being sandwiched between them;

at least one planet gear shaft means, each being arranged parallel to said steering shaft but disposed eccentrically thereof on said boss plate means and journalled on said boss plate means for rotation about its own longitudinal axis;

first and second planet gear means fixed to the respective said at least one planet gear shaft means and respectively meshingly engaged with said first and second sun gear means, so that as said steering ring is rotated, said pad does not rotate but remains with its same side up confronting the vehicle driver;

means defining a first at least generally coaxially arranged annular slot in said first sun gear means;

means defining a second at least generally coaxially arranged annular slot in said second sun gear means;

means defining a slot formed axially through said boss plate means and arranged to communicate towards both said first and second annular slots;

an electrical control cable operatively connected to said at least one switch means, having a loose spiral portion in one angular sense at least generally coaxially received in said second annular slot in said second sun gear means, another loose spiral portion in an opposite angular sense at least generally coaxially received in said first annular slot in said first annular slot means, an intermediate axially extending portion extending through said slot in said base plate means and operatively interconnecting said loose spiral portions, and having a further portion extending from said opposite sense loose spiral portion for electrical connection with at least one electrically-controlled accessory, so that said steering shaft may be turned clockwise sufficiently to maximally steer the vehicle to the left and to the right without disrupting electrical control of said at least one electrically-controlled accessory.

4,604,913

PARKING BRAKE RELEASING MECHANISM

Masaru Kyonomine, Toyota, Japan, assignor to Toyoda Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 851,702, Nov. 15, 1977, abandoned. This application Nov. 4, 1983, Ser. No. 549,012

Claims priority, application Japan, Nov. 16, 1976, 51-153742[U]

Int. Cl.[4] G05G *5/06*

U.S. Cl. 74—540 **18 Claims**

1. A parking brake release mechanism for use in association with a parking brake actuator member having a toothed quadrant disposed on a part thereof and movable between a brake applied and brake release position, said release mechanism comprising:

a pawl which is engaged with said toothed quadrant for

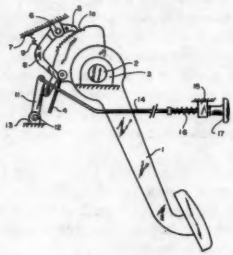
restraining the movement of said actuator member to its brake release position;

a first stationary member rotatably supporting said pawl about a first axis;

a first lever secured to said pawl and integrally rotatable with said pawl, said first lever having an intermediate portion terminating in a free end remote from said first axis;

a second stationary member;

a second lever pivotally coupled to said second stationary member for rotation about a second axis and having an intermediate portion terminating in a free end remote from said second axis, said free end of the first lever abutting the intermediate portion of said second lever at a first substantially single point of contact to maintain a lever ratio of the mechanism at one level while said pawl is engaged with said quadrant;



means for imparting rotative force to said second lever to cause the intermediate portion of said second lever to move against the free end of said first lever solely at said first point of contact and rotate while maintaining said first point of contact to cause rotational movement of said first lever to disengage said pawl from said quadrant, said first lever being spaced from said second lever such that said first lever only contacts said second lever by engagement of said free end of said first lever abutting the intermediate portion of said second lever at said first point of contact during rotation of said first and second levers until disengagement of said pawl from said quadrant whereupon said free end of said second lever contacts said first lever solely at the intermediate portion of said first lever at a second substantially single point of contact to thereby effect a sudden decrease in lever ratio to a level lower than said one level upon further rotation of said second lever.

4,604,914

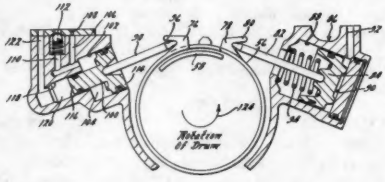
AUTOMATIC POWER TRANSMISSION MECHANISM WITH A PRESSURIZED BRAKE BAND ANCHOR

Alan R. Fisher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1984, Ser. No. 628,051

Int. Cl.[4] F16H *47/08, 3/44;* F16D *51/00*

U.S. Cl. 74—688 **2 Claims**



1. In an automatic transmission mechanism having a hydrokinetic torque converter and multiple ratio gearing, said converter having an impeller adapted to be connected to an engine and a turbine connected to an input element of said gearing, an output element of the gearing being adapted to be connected to a torque output member of said mechanism, at least one clutch and at least one brake forming a part of said gearing for controlling the relative motion of elements of the gearing to effect ratio changes;

said brake upon application providing a reaction point for said gearing so that torque multiplication can be achieved, said brake comprising a brake drum, a brake band surrounding said brake drum having an operating end and an anchor end, a fluid pressure operated servo having a servo piston connected operatively to said operating end of said brake band;

an anchor piston connected operatively to said anchor end of said brake band, a cylinder receiving said anchor piston, said cylinder and said anchor piston defining a pressure cavity;

means for pressurizing said anchor piston with a threshold pressure to eliminate slack in said brake band when said servo piston is retracted;

orifice means for controlling the displacement of fluid from said cylinder by said anchor piston as said servo piston is stroked upon brake application;

said anchor piston having two pressure areas, one of said pressure areas being subjected to said threshold pressure to effect a drag force on said brake band and the other of said pressure areas being subjected to a reaction pressure as said anchor piston is stroked upon movement of said servo piston to a brake applying position.

4,604,915

DRIVE SYSTEM FOR A ROTARY-, PIVOT-, AND PROPELLING-DRIVE OF A VEHICLE ESPECIALLY OF AN EXCAVATING MACHINE

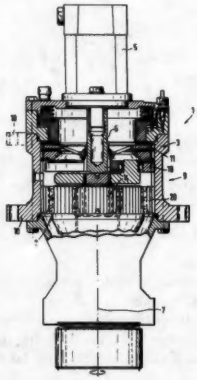
Friedhelm Söffge, and Hans-Peter Knauss, both of Leonberg, Fed. Rep. of Germany, assignors to Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,430

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245720

Int. Cl.[4] F16H *3/44, 57/10*

U.S. Cl. 74—790 **4 Claims**



1. A drive system for a travelling drive of a vehicle, a driving motor, via an engine output shaft, being connected with a planetary gear having a gear input shaft, and the shafts interacting with a pressure-medium-actuated braking device provided approximately in a vertical longitudinal central plane of a driving gear, and interacting with a spring loading arrangement disposed in a housing of the planetary gear and includes

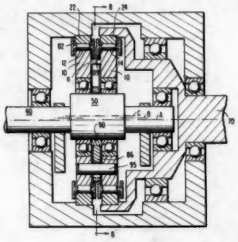
a brake disk which is supported on a toothing of the input shaft and is arranged between two brake plates, wherein the brake plates are held in a toothed wheel that is connected with a stationary pinion cage, and wherein the cage extends into the vertical longitudinal central plane, and wherein the braking device is connected between said cage and the driving motor, and a single bearing arranged in the vertical longitudinal central plane for support of the braking device in said bearing.

4,604,916

EPICYCLIC TRANSMISSION HAVING CAM DRIVEN ROLLER RETAINER

Robert G. Distin, Jr., Louisville, Colo., assignor to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,929
Int. Cl.[4] F16H *1/34*
U.S. Cl. 74—805 **17 Claims**



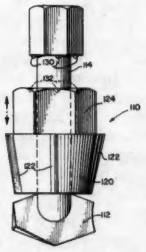
1. In an epicyclic speed reducing transmission of the type employing gear members having opposed gear surfaces with a plurality of rollers in rolling engagement with and transmitting torque between the same, the improvement comprising retainer means directly guiding said rollers, and cam means for orbitally driving said retainer means while said retainer means maintains said rollers in a circular array, said cam means being centered at the center of the circle defined by said rollers.

4,604,917

EASY-OUT THREADED FASTENER EXTRACTOR

Eli Polonsky, 1608 S. Kenton, Aurora, Colo. 80012

Filed Mar. 12, 1985, Ser. No. 710,675
Int. Cl.[4] B25B *13/50*
U.S. Cl. 81—53.2 **1 Claim**



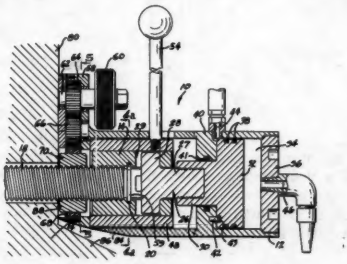
1. A combination tool for extracting broken threaded fasteners from a threaded bore comprising; drill means for forming a bore in said broken fastener, shaft means attached to said drill means, drive means attached to said shaft means opposite said drill means, extractor means rotatably and reciprocally moveable on said shaft means and coupling means for coupling said extractor means to said drive means, said coupling means formed of a plurality of projections on said drive means and a plurality of projections receiving openings on said extractor means; whereby, in use, a bore is drilled in said broken fastener by said drill means while permitting movement between said drill means and said extractor means allowing said drill means to penetrate said broken fastener to a predetermined depth before said coupling means engages said drive means and said extractor means causing said extractor means to be driven by said drive means to engage the interior of said bore to extract said broken fastener.

4,604,918

APPARATUS FOR APPLYING TENSION TO STUDS

Derek L. Aldred, Dipton, England, assignor to Haskel, Inc., Burbank, Calif.

Filed Sep. 20, 1985, Ser. No. 778,220
Int. Cl.[4] B25B *29/02*
U.S. Cl. 81—57.38 **16 Claims**



1. A stud tensioning apparatus comprising:
an array of jaw segments, each having an inwardly facing engagement surface with grooves thereon adapted to engage threads on said stud, each of said segments having an attachment portion extending away from said surface and defining an aperture therein;
a pull member disposed along an axis about which said segments are arranged and having a plurality of hangers projecting radially from said axis into said apertures;
radial confinement means for urging said segments inwardly against said stud; and
actuator means for applying an axial tensioning force to said pull member and thus to said segments and said stud.

4,604,919

OPEN END RATCHET SOCKET WRENCH

Richard P. Rollo, 712 S. Spruce, Pana, Ill. 62557

Filed Dec. 6, 1984, Ser. No. 679,130
Int. Cl.[4] B25B *13/00*
U.S. Cl. 81—58.2 **2 Claims**

1. The combination of an open end socket wrench for turning nuts and a cooperating socket comprising a wrench handle portion, a wrench head portion, said head portion having wall means defining a socket receptacle in the form of an annular ring with concentric inside and outside surfaces and parallel upper and lower surfaces, wall means in said annular ring defining opposed recesses extending from said inside ring surface to said outside surface and between said upper and lower surfaces, said head portion adapted to rotatably support said socket, with said inner surface rotatably engaging said socket, wall means defining a slot in said socket wrench head and drive means on said socket head engagable with said socket to drive said socket in a selected direction and release said socket in the other direction as said handle is returned to a driving position, said drive means including pawls, pivot pins for each of said pawls, said pins extending between said upper and lower surfaces, said pins being located on a concentric circle with respect to said inside ring surface to pivotally

support said pawls in said recesses for pivotal movement in a plane transverse to said socket rotation with said pawls extending outwardly of said rings for manual engagement and release with said pawl tips movable into and from said socket receptacle and springs in said recesses in said wrench heads engaged with said pawls at a point remote from said pivot pins, and

biasing said pawls about said pivot pins, said socket adapted to rotatable interfit in said wrench head and wall means on said socket which cooperate with said wrench drive means to afford driving of said socket and wall means on said socket defining a slot which registers with said wrench head slot to enable access to inline nuts.

4,604,920

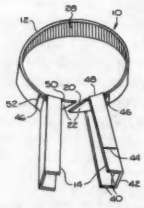
FILTER WRENCH

Conrad E. Dupke, 870 Tanglewood Dr., Wheeling, Ill. 60090

Filed Jun. 11, 1985, Ser. No. 743,390

Int. Cl.[4] B25B *13/46*

U.S. Cl. 81—64 **8 Claims**



1. A filter wrench comprising,

a curved band in a near-circle shape, and having an axis, and radial and circumferential directions according to a circle,

the band including end portions having end surfaces directed toward each other, and otherwise being continuous from one end to the other,

the band being of uniform cross sectional shape between points closely adjacent the end surfaces, and being of uniform thickness throughout,

the band being self spring biased to an outer position of large size and capable of being flexed to an inner position of small size,

the band being of great thickness whereby in moving between its said positions, the band does not bend in localized areas, but all bending takes place as a continuous and progressive action distributed throughout the length of the band, whereby in said positions, and positions therebetween, the band maintains its near-circle shape, and

handles secured to the band at the end portions thereof, and extending generally radially therefrom, the handles being rigid, and capable, when gripped in the hand and moved toward each other in circumferential direction, of contracting the band to its inner position,

the handles being rigidly secured to the band each at points spaced apart a substantial distance circumferentially of the band, whereby in response to the handles being moved toward each other, the band is capable of withstanding deformation at the junctures of the handles and the band.

4,604,921

ADJUSTABLE CONTROL ASSEMBLIES

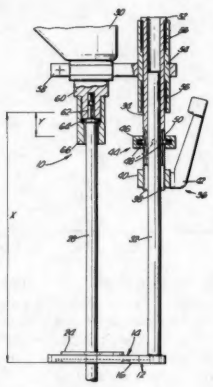
George D. Hewison, Hampshire, England, assignor to ITW Limited, Camberley, England

Filed May 20, 1985, Ser. No. 736,206

Claims priority, application United Kingdom, May 24, 1984, 8413275

Int. Cl.[4] B25B *23/00*

U.S. Cl. 81—429 **8 Claims**



1. An adjustable control assembly comprising first abutment means for placement against a workpiece, the first abutment means being provided on first spacing means which is movable with respect to second abutment means, the second abutment means being provided on second spacing means which is movable with respect to third abutment means for attachment to a worktool, the first and second spacing means being releasably secured together by connector means entirely separate from the second abutment means, the connector means providing longitudinally extending slots in a free end of a hollow tube forming the second spacing means, and further providing a pinch bracket for squeezing said slotted end of the hollow tube onto a rod forming the first spacing means, the preset distance between the first and third abutment means being adjustable to correspond to the desired initial position of the worktool with respect to the workpiece, and the preset distance between the second and third abutment means being adjustable to correspond to the maximum permitted advance of the worktool with respect to the workpiece.

4,604,922

DRILL PIPE TURNING DEVICE

Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814

Filed Sep. 17, 1984, Ser. No. 651,162

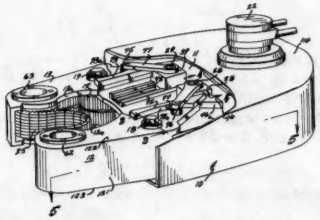
Int. Cl.[4] B25B *17/00*

U.S. Cl. 81—57.17 **3 Claims**

1. In a tool conformed to clamp onto segments of pipe and to advance in rotation said segments, including a frame, two opposed jaw-like arms each of said arms at a first end thereof attached to said frame by a pivotal mount and each arm including rolling means at a free second end thereof, a chain loop, a

motor attached to said frame for advancing said chain loop, said motor including a drive sprocket thereon, said chain loop extending around and in engagement with the drive sprocket, the pivotal mounts, and the rolling means;

said arms each including levers radially extending from said pivoted mounts and projecting over said frame;



a pair of shuttles slidably mounted on said frame and having camming means to abut against said levers to pivotally articulate said arms around said pivotal mounts in the course of the translation of said shuttles;

a pair of shuttle idles supported for rotation on said shuttles and aligned to engage the exterior of said chain loop; and

actuating means operatively connected for translating said shuttles.

4,604,923

METHOD OF MACHINING A WORKPIECE BETWEEN CENTERS AND A CLAMPING DEVICE FOR PERFORMING THIS METHOD

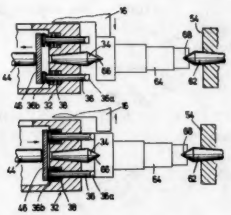
Helmut F. Link, Aichwald, and Erich E. Schäfer, Nabern, both of Fed. Rep. of Germany, assignors to Index-Werke Komm. Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,462

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301438

Int. Cl.⁴ B23B *1/00, 33/00*

U.S. Cl. 82—1 C **11 Claims**



1. A method for machining a workpiece mounted in a lathe between a rotatable work spindle rotatable about an axis of rotation and having a chuck, front drivers and first center at one workpiece end and an axially movable second center mounted on a tailstock and urged in the direction of said first center at a second workpiece end, the second center being disposed substantially in alignment with the work spindle axis of rotation, comprising the steps of inserting a workpiece between the first and second centers; centering and supporting the workpiece between said centers; applying force to the workpiece end engaging the first center and removing the centered workpiece from engagement with said first center in the direction of said second center; supporting said workpiece between the point of force application and said second center; urging said second center to move substantially along said work spindle axis of rotation away from said first center; clampingly supporting the workpiece about peripheral portions thereof by means of said chuck; rotating the workpiece while so clamped to said chuck by rotatably driving said chuck; rough-machining the rotating workpiece; releasing the workpiece from the chuck while supporting the workpiece between said first and second centers; urging said front drivers against the end of the workpiece engaging the first center; rotating said workpiece by means of said front drivers while said workpiece is supported between said centers, and finish-machining the rotating workpiece.

7. A workpiece clamping apparatus for use in a lathe, comprising a work spindle rotatably driven about an axis of rotation; bearing means rotatably mounting said work spindle; a first workpiece center supportably mounted on an end portion of said work spindle; retractable front driver means supportably mounted on the spindle end portion; a tailstock spaced axially from said work spindle end portion; means for urging said front driver means into a retracted position wherein the distal ends of said front driver means are inwardly disposed of the distal end of the first workpiece center; an axially movable second workpiece center rotatably mounted on said tailstock; means for urging said second center toward said first center whereby a workpiece may be centered and supported between said first and second workpiece centers; a chuck mounted on said work spindle and having clamping jaws for clampingly engaging a workpiece after said workpiece is centered, and cooperative action with said second center in maintaining a clampingly engaged workpiece in substantial alignment with said axis of rotation; means for moving said clamping jaws in synchronism and concentrically to said axis of rotation into workpiece-engaging and workpiece-release conditions; said chuck clamping jaws moving at an angle to the work spindle axis of rotation when moving into engagement with a workpiece and being so located relative to said first workpiece center as to impart axial movement to a workpiece centered between said first and second workpiece centers whereby a workpiece is simultaneously driven from engagement with said first workpiece center, axially moved in opposition to the second center substantially along the workpiece axis of rotation and clamped into a position substantially coaxial with the workpiece axis of rotation; and means for extending said front driver means from the retracted position into engagement with the end of a workpiece when said workpiece is engaged by said first and second centers.

4,604,924

CONTROL DEVICE FOR THE OPENING AND CLOSING OF THE METAL BAR SLIDING GUIDES IN AN EQUIPMENT FOR THE FEEDING OF METAL BARS TO A MULTIPLE-SPINDLE LATHE

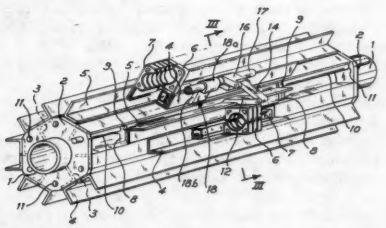
Giovanni Cucchi, and Pietro Cucchi, both of Bussero, Italy, assignors to F. lli Cucchi S.r.l., Bussero, Italy

Filed Jun. 26, 1984, Ser. No. 624,859

Claims priority, application Italy, Jul. 8, 1983, 21988 A/83

Int. Cl.⁴ B23B *13/04*

U.S. Cl. 82—27 **11 Claims**



1. A control device for feeding metal bars to a multi-spindle lathe comprising:

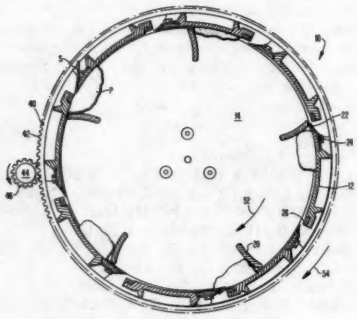
a frame;

rotatable support means carried by said frame;
a drum mounted on said support means for rotation about its longitudinal axis;
bar guides fixedly secured to said drum for rotation therewith having a fixed half and a movable half, said movable half being pivotally mounted on said drum and adapted to be moved between opened and closed positions with respect to said fixed half;
a first shaft having an axis parallel to said drum, said first shaft being rotatably mounted on said drum about said first shaft axis;
a hinge transmission kinematic mechanism connecting said first shaft to said movable half and adapted to move said movable half between the opened and closed position;
a latch mechanism connected to said first shaft, said latch mechanism including a fixed part secured on said drum and said first shaft being journaled therein, and a mobile part facing said fixed part and being secured on said first shaft for rotation therewith;
a locking pin located within said fixed part and being parallel to said first shaft, said locking pin being positively locked within said mobile part when said movable half is closed;
means operatively connected to said first shaft for disengaging said locking pin from said mobile part and for actuating the rotational movement of said first shaft whereby said movable half is opened.

4,604,925
METHOD AND APPARATUS FOR SLICING PRODUCE

Lawrence W. Wisdom, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed May 24, 1985, Ser. No. 737,546
Int. Cl.[4] B26D *3/28*
U.S. Cl. 83—13 **16 Claims**



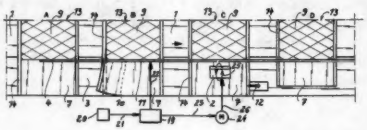
1. A centrifugal slicer comprising
(a) an impeller for receiving an article to be sliced, the impeller including means for carrying an article to be sliced;
(b) means for rotating the impeller so that an article to be sliced being carried by the impeller is centrifugally forced in an outward direction;
(c) a cylindrical slicing head adapted for cooperation with the impeller so that an article to be sliced is rotated by the impeller within the slicing head, the slicing head including at least one knife for slicing an article when said article is centrifugally forced against the knife during rotation of the impeller; and
(d) means for rotating the cylindrical slicing head in the same direction as the impeller but at a rotational speed less than that of the impeller.

9. A method for slicing produce in a centrifugal slicer of the type having an impeller for receiving and carrying an article to be sliced, which impeller cooperates with a cylindrical slicing head having at least one slicing knife, the method comprising:
(a) feeding an article to be sliced to the impeller,
(b) rotating the impeller to centrifugally force the article against the slicing head knife, and
(c) rotating the slicing head in the same direction as the impeller, but at a rotational speed less than that of the impeller, to slice the article while simultaneously reducing waste and scrap.

4,604,926
METHOD OF AND APPARATUS FOR AUTOMATICALLY ORIENTING A FABRIC WITH ALIGNED NAP ZONE AND NAPLESS ZONE

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,505
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334645
Int. Cl.[4] B26D *7/14*; D06H *3/12*
U.S. Cl. 83—18 **20 Claims**

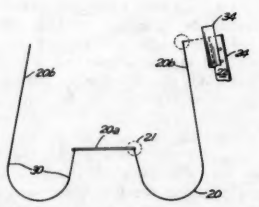


1. A method of automatically producing a fabric with a nap zone and napless zone joining along a line comprising the steps of:
(a) continuously transporting the fabric along a conveyor in a direction parallel to said line;
(b) sliding said fabric under a guide elongated in and extending in said direction and pressing on said fabric;
(c) incrementally and iteratively drawing said napless zone laterally transverse to said direction to bring an edge of the nap zone against the guide;
(d) continuing to transport the fabric so that said edge of the nap zone continues to lie along the guide; and
(e) severing a portion of the napless zone in such a manner that the napless zone has an outer edge parallel to the edge of the nap zone.

4,604,927
RAZOR BLADE CUTTER ASSEMBLY

George J. Reimann, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 658,727
Int. Cl.[4] B26F *1/44*
U.S. Cl. 83—55 **17 Claims**



14. A method for die cutting a stack of layered material comprising;
providing said stack with a supporting surface having a relief slot formed in said surface in the shape of the desired cut; and

applying cutting pressure to said stack with a razor blade cutter in the configuration of the desired cutting shape opposite said slot, said razor blade cutter having a maximum thickness of not less than about 0.01 inches and not more than about 0.040 inches, said blade having a continuous blade with a continuous body portion having two sides and two edges, one of said edges being a substantially straight razor sharp continuous cutting edge, said razor blade comprised of at least two separate blades mounted to form the desired cutting shape, with straight configured blades having a maximum thickness of not less than about 0.030 inches, and irregularly configured blades having a maximum thickness of not more than about 0.015 inches, whereby said stack of layered stock material is cut in the desired shape.

4,604,928

SECTION CONVEYING AND COOLING APPARATUS

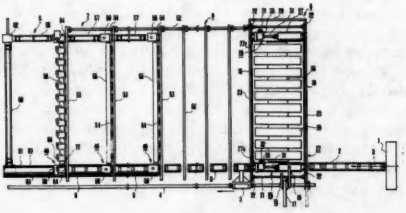
Masahiro Honda, Ube, Japan, assignor to Ube Industries, Ltd., Yamaguchi, Japan

Filed Aug. 23, 1985, Ser. No. 768,976

Claims priority, application Japan, Aug. 28, 1984, 59-177567[U]

Int. Cl.⁴ B26D *7/06*; B23D *45/02*

U.S. Cl. 83—151 **7 Claims**



1. A section conveying and cooling apparatus comprising:

an elongated table for supporting a member continuously supplied thereto at a start point of conveyance and cooling;

a cutter provided for the table for cutting the member into sections of predetermined length;

a plurality of head chucks for gasping head ends of said sections;

plurality of tail chucks for grasping tail ends of said sections, each ones of said head chucks and said tail chucks including means for gasping said sections and means for adjusting pulling forces applied to said sections and said head chuck and said tail chuck in pair sequentially conveying said sections in a direction perpendicular to said sections while maintaining said sections in parallel and at equal distances;

head chuck moving means provided at a head side of said sections, which runs along an endless path including forward, downward, rearward and upward paths which are contained in a plane perpendicular to an axis of said section, between a conveyance and cooling starting position and a conveyance and cooling ending position, and which has a chuck engaging means for engaging with said head chuck while it is moved horizontally but releasing said head chuck while the same is moved in the vertical direction;

head chuck elevating means respectively provided at forward and rearward limit positions of said head chuck moving means for raising and lowering said head chuck;

tail chuck moving means which is disposed on a tail side of said section to intersect the same, and forwardly moved at an equal speed as said head chuck moving means, and which includes a holding means for holding said tail chucks at the same spacing as said head chucks between said conveyance and cooling starting and end positions; and

tail chuck returning means for transferring said tail chuck from said conveyance and cooling end position of said tail chuck moving means to said conveyance and cooling start position.

4,604,929

SELF-ALIGNING GUILLOTINE

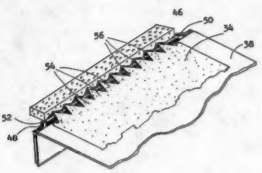
Leslie Vallance, Livingston, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 31, 1985, Ser. No. 696,756

Claims priority, application United Kingdom, Mar. 22, 1984, 8407453

Int. Cl.⁴ B26D *5/16*

U.S. Cl. 83—524 **30 Claims**



1. An apparatus for severing a movable web, said apparatus comprising: a blade, movable towards said web on a first face of said web for a cutting portion of said blade to be passed through said web to sever said web; and an anvil in opposition to said blade for engaging and supporting said web on a second face of said web when said web is urged thereagainst by said blade, said anvil comprising an opening for accommodating said cutting portion of said blade and said anvil being co-operative with said blade to support said web against the cutting action of said blade; where a first boundary of said opening is defined by an edge of a resilient elastic member, where a second boundary of said opening, opposing said first boundary, is defined by an edge of a rigid plate, where a face of said resilient elastic member is operative to assist in the support of said second face of said web, and where said cutting portion of said blade is operative to displace said edge of said resilient member to allow ingress of said cutting portion of said blade into said opening despite any misalignment between said blade and said opening.

4,604,930

PUNCH PRESS

Robert M. Avila, 8362 Seaport Dr., San Clemente, 92764, and Glenn A. Hoffman, Jr., Huntington Beach, both of Calif.

Filed Apr. 30, 1984, Ser. No. 605,636

Int. Cl.⁴ B26D *5/12*

U.S. Cl. 83—527 **8 Claims**

1. A punch press, comprising:

(a) a platen and a bed disposed in parallel relationship to each other,

(b) first and second guide pins projecting upwardly from said bed,

said guide pins being perpendicular to said bed,

said guide pins being spaced sufficiently far from each other to permit mounting of dies therebetween,

each of said guide pins having a longitudinal bore therethrough,

(c) bushings mounted slidably on the upper end portions of said guide pins,

said bushings having upper portions extending above the upper ends of said guide pins and at least to said platen,

(d) pull rods extending through said bores in said guide pins,

(e) connector means to connect the upper ends of said pull rods to said platen,

said connector means comprising threaded elements threadably associated with the upper ends of said pull rods,

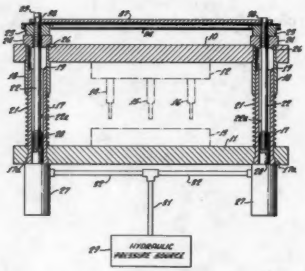
said threaded elements being seated on said platen,

said threaded elements being adapted to be rotated relative to said pull rods to thereby adjust the position of said platen relative to said bed prior to injection of fluid into said cylinder,

(f) helical compression springs mounted around said guide pins and seated between said bed and said bushings,

(g) cylinders mounted at said bed,

the pistons of said cylinders being connected to the lower ends of said pull rods,



(h) means to inject fluid into said cylinders to cause them to shift their pistons downwardly, thus pulling downwardly on said pull rods and causing downward movement of said platen,

(i) means to effect simultaneous and equal rotation of said threaded elements relative to their associated pull rods to thus effect uniform adjustment at each of said pull rods, whereby to prevent unbalance of forces in the press, and

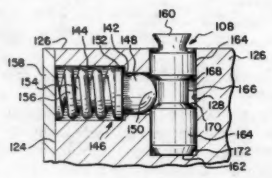
(j) means to prevent rotation of said pull rods during rotation of said threaded elements including a bar extended between said pull rods and having a noncircular opening at each of said pull rods, said noncircular openings mating with noncircular portions of the ends of said pull rods to prevent rotation.

4,604,931

QUICK CHANGE ROTARY PUNCH

Donald G. Bastian, Dayton, and Gregory L. Slepicka, Miamisburg, both of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Aug. 16, 1985, Ser. No. 766,601
Int. Cl.[4] B26F *1/10*
U.S. Cl. 83—665 **12 Claims**



5. An improved punch reel for use in a rotary punch to provide regularly spaced holes along a web of material, said punch reel being adapted to receive and accurately retain punch tools, each having a punch head at one end, a base at the other end, and an outer cylindrical sidewall, the outer cylindrical sidewall having a circumferential undercut which includes a tapered wall extending toward the base of said punch, said reel comprising:

an annular main body member having a central shaft-receiving opening therethrough, a planar side face, and an outer cylindrical surface having a plurality of regularly spaced radially extending cylindrical socket openings therein for receiving the individual punches, said punch-receiving socket openings being adjacent to said planar side face of said main body member;

a corresponding plurality of cylindrical bores extending through said planar side face and intersecting said punch-receiving socket openings, each of said bores having a counterbore at said planar side face;

a plurality of punch-retaining plungers, one for each of said punch-receiving socket openings, each of said plungers having a first cylindrical portion terminating in a spherical punch-retaining head at its distal end and a spring-retaining flange at its base, and a second cylindrical portion extending from the base of said first cylindrical portion beyond said flange, said first cylindrical portion being sized to be received within one of said cylindrical bores to extend into a respective one of said punch-receiving socket openings, said flange being sized to be received within said counterbore;

a plurality of spring members, one for each of said plungers, each of said spring members being sized to receive said second cylindrical portion of one of said plungers and to be received within one of said counterbores; and

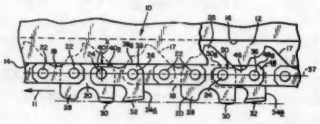
a cap plate secured to the planar side face of said main body member to retain all of said plungers and said springs in said respective bores and counterbores, said springs being sized such that they are placed into compression between said cap plate and said spring-retaining flange whereby each punch may be quickly changed yet, once inserted, is retained within one of said punch-receiving socket openings by the spring-induced pressure of the spherical punch-retaining head of said plunger within the circumferential undercut of the punch.

4,604,932

SAFETY CHAIN FOR CHAIN SAWS

Gerald J. Doiron, Harwich, Mass., assignor to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 544,783, Oct. 24, 1983, abandoned.
This application Apr. 5, 1985, Ser. No. 720,292
Int. Cl.[4] B27B *33/14*
U.S. Cl. 83—830 **15 Claims**



1. A chain for a chain saw including a cutter bar having a periphery about which the chain circulates with a substantially straight portion along which the chain travels, said chain comprising articulated cutting tooth elements and additional non-cutting elements, safety members on the non-cutting elements projecting in the same direction as the cutting teeth and shiftable between two positions while on the substantially straight portion of the bar, one position in which the safety members extend beyond the cutting teeth inhibiting cutting, and a second position in retracted position in which the teeth are allowed to cut, the safety members being normally held in said one position solely by longitudinal tension in the chain to inhibit cutting in the absence of pressure on the chain toward the cutter bar, and pins articulating the elements wherein tension applied to the chain about the cutter bar normally maintains the pins in a single line, but at the same time allows

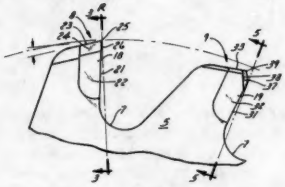
retraction of certain pins upon contact of the chain with a relatively hard substance.

4,604,933

CARBIDE-TIPPED CIRCULAR SAW FOR METAL CUTTING AT LOW SURFACE SPEEDS

Ernest G. Lesher, Cleona, Pa., and Cornelius E. Mieras, Jasper, Ind., assignors to North American Products Corp., Atlanta, Ga.

Filed Oct. 28, 1983, Ser. No. 546,468
Int. Cl.[4] B23D *57/00*; B27B *33/08*
U.S. Cl. 83—851 **6 Claims**



1. A metal cutting circular saw that comprises a blade body having an axis and a plane of symmetry normal to said axis and having gullets that separate circumferentially spaced teeth, and wherein each tooth comprises a carbide insert which defines a front portion of the tooth and which has opposite side surfaces that face substantially axially outwardly and a top surface that faces away from said axis, said saw being characterized by:

A. the teeth being arranged in pairs to cooperate for triple chip cutting, with the two teeth of each pair circumferentially adjacent to one another; and

B. each pair comprising

(1) a lead tooth

(a) having a cutting edge which

(i) is parallel to said axis and

(ii) extends across at least half the distance between the side surfaces of the lead tooth but

(iii) has its ends spaced inwardly from those side surfaces,

(b) said cutting edge being defined by the junction of the top surface on the lead tooth with a front surface thereon, and

(c) said front surface being at a positive rake angle, and

(2) a follower tooth

(a) having a pair of oppositely oblique cutting edges, one at each side of said plane of symmetry,

(i) each of which is inclined rearwardly away from said plane and

(ii) each of which is at a smaller distance from said axis than said cutting edge on the lead tooth,

(b) each of said oblique cutting edges being defined by the junction of the top surface on the follower tooth with an obliquely forwardly and sidewardly facing surface thereon, and

(c) each said obliquely forwardly and sidewardly facing surface being at a negative rake angle.

4,604,934

CARRIAGE TRAIN PRECISION LINEAR POSITIONING SYSTEM

Martin R. Elliott, Austin, Tex.; Dwight A. Bollinger, Mt. Zion, Ill.; Kris B. Curry, and Daniel C. Plocik, both of Decatur, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

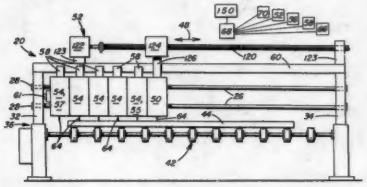
Filed May 8, 1985, Ser. No. 732,040
Int. Cl.[4] C03B *33/02*
U.S. Cl. 83—880 **20 Claims**

1. An apparatus for positioning a plurality of carriages across a work surface, comprising:

means for supporting said carriages for movement across the work surface;

an elongated member extending across the work surface;

means for detachably interconnecting said carriages together to form a carriage train;



means for driving an endmost carriage along said supporting means to move said train across the work surface; and

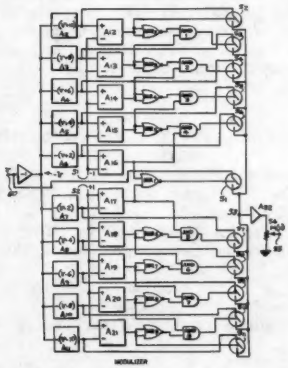
means operatively associated with each of said carriages, except said endmost carriage, selectively actuatable for holding its associated carriage to said elongated member at a preselected position across the work surface.

4,604,935

APPARATUS AND METHOD FOR PROCESSING AUDIO SIGNALS

Ellis D. Cooper, New York, N.Y., assignor to Joseph A. Barbosa, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,547
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.[4] G10H *1/00*
U.S. Cl. 84—1.01 **13 Claims**



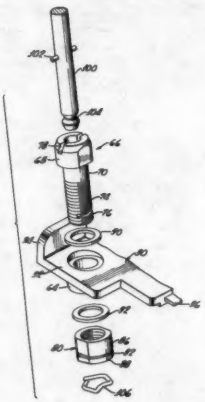
1. In a method for producing musical signals with variable bandwidth responsive to input signal amplitude, the step comprising smoothing the discontinuities in a variable amplitude audio input in the time domain with a continuous and bilaterally tapered transfer function.

4,604,936

SNAP-IN VIBRATO ARM

John F. Page, La Mirada, Calif., and Helmut Schaller, Feucht, Fed. Rep. of Germany, assignors to Fender Musical Instruments Corporation, Brea, Calif.

Filed Jan. 4, 1985, Ser. No. 689,715
Int. Cl.[4] G10D 3/12
U.S. Cl. 84—313 15 Claims



1. A guitar-type musical instrument comprising:
a body,
a plurality of strings mounted to and extending over said body in tensioned relationship,
a string mounting element movably mounted to the body, said strings being connected to the string mounting element so that motion of the string mounting element produces a vibrato sound, said string mounting element comprising a bridge plate pivoted to said body,
a vibrato actuator handle for effecting motion of the string mounting element, said handle having an operator arm extending in a direction generally parallel to said body, and
means for detachably and rotatably connecting the handle to said string mounting element, said means for connecting the handle comprising a shaft rotatably mounted to the plate and means for detachably connecting the handle to said shaft, whereby the handle may be rotated to move the arm to different positions over said body and may be completely detached without the use of tools.

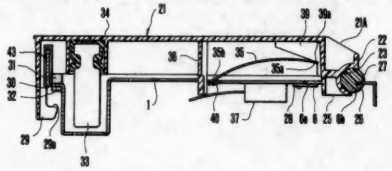
4,604,937

KEYBOARD DEVICE OF ELECTRONIC MUSICAL INSTRUMENT

Shinji Kumano, and Motoshi Murasaki, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 17, 1984, Ser. No. 571,913
Claims priority, application Japan, Jan. 20, 1983, 58-7955; Jan. 20, 1983, 58-7956
Int. Cl.[4] G10C 3/12
U.S. Cl. 84—435 21 Claims

1. A keyboard device of an electronic musical instrument, comprising:
a keyboard frame;
a plurality of keys, which are aligned on said keyboard frame, and which are vertically pivotable, wherein each key of said plurality of keys, has a longitudinal axis and a semi-circular surface at a back end portion thereof having a radius of curvature lying in a vertical plane passing through said longitudinal axis of said key,
a plurality of return springs each of which corresponds to one of said keys and has one end stopped by said key and the other end stopped by said keyboard frame so as to bias said key toward a nonstruck position; and
a plurality of pivot members each of which is disposed on said keyboard frame at an end of a corresponding one of said plurality of keys on said longitudinal axis of each of said



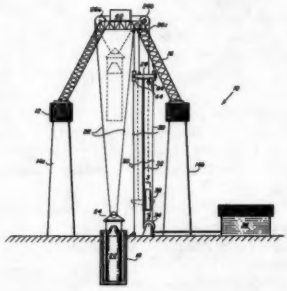
keys, each of said plurality of pivot members having a semi-circular surface which is in slidable contact with said back end portion of said corresponding one of said keys, so as to allow each of said keys to perform pivotal movement,
said back end portion of each of said keys being spring-biased against said semi-circular surface of said pivot member by means of said return spring.

4,604,938

ARRESTING AND RECOVERY SYSTEM FOR TEST MISSILES

Robert E. Kennedy, Santa Cruz, and James D. Neef, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1984, Ser. No. 637,238
Int. Cl.[4] F41F 3/042, 3/052; F16F 7/00
U.S. Cl. 89—1.8 9 Claims



1. A system for arresting and recovering a test ballistic missile launched from a surface launcher to a predetermined height, said system comprising:
a support structure disposed over the launcher and formed to stand higher than the launch height;
a loop of cable formed to be operatively suspended from said support structure and adapted to be coupled to the test missile;
a singletree formed for spreading and terminating the ends of said cable loop such that one end is swivelably connected to said singletree and the other end is slidably engaged therewith;
means for capping the slidable end of said cable loop such that the cable end may not be withdrawn from said singletree;
arresting means operatively connected to said singletree for taking up slack developed in said cable loop as the test

missile is launched and for arresting the test missile after it has reached its apogee;

means for releasably capturing said capping means at the limit of travel of said singletree; and

means for lowering the test missile after it has been arrested, whereby the missile may be recovered.

4,604,939

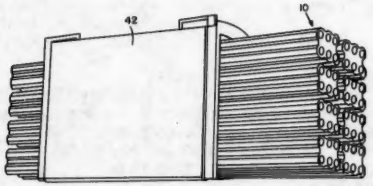
LIGHTWEIGHT COMPOSITE LAUNCHER POD

Lawrence D. Hoffmeister, New Market, and Richard J. Thompson, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 20, 1984, Ser. No. 642,850

Int. Cl.[4] F41F *3/04*

U.S. Cl. 89—1.816 **10 Claims**



1. A lightweight composite launcher pod comprising a multiplicity of elongated composite launch tubes that are mounted in a cluster in a composite material that completely surrounds each of said elongated launch tubes about the circumference thereof and for the length thereof with the axis of each of the elongated launch tubes being substantially parallel to each of the other axes and said composite material having outer surfaces that bearing and locking structure on one side of said composite launcher pod, an alignment surface on said composite material and on an opposite side of said launcher pod from said bearing and locking structure, and alignment surfaces on said composite material that are parallel and on opposite sides of said launcher pod such that said parallel alignment surfaces on opposite sides are perpendicular to said alignment surface on said side opposite said bearing and locking structure, said alignment surfaces each being spaced inwardly from outer most side surfaces and being spaced so as to produce a more uniform thickness of said composite material surrounding said elongated launch tubes.

4,604,940

HIGHLY RESILIENT POLYURETHANE ELASTOMER

Morris A. Mendelsohn, Wilkins Twp., Allegheny County, and Francis W. Navish, Jr., East Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1985, Ser. No. 707,111

The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.

Int. Cl.[4] F41F *3/04*; C08G *18/32*

U.S. Cl. 89—1.816 **9 Claims**

3. A highly resilient polyurethane elastomer structural member in circumferential contact with a launchable missile, comprising the cured admixture of:

(A) about 6.6 to about 7.2 parts by weight of a polyurethane prepolymer prepared from a composition consisting essentially of:

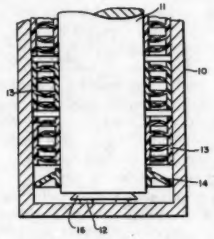
(1) 2.60 moles to 2.80 moles of 4,4'-diphenylmethane diisocyanate,

(2) about 0.23 mole to about 0.31 mole of a low molecular weight triol selected from the group consisting of trimethylol ethane, trimethylol propane, trimethylol butane, trimethylol pentane and mixtures thereof, and

(3) 1.0 mole of polyoxytetramethylene glycol, with

(B) 1.0 part by weight of hydroquinone di-(β-hydroxyethyl)ether acting as a chain extender.

8. The structural member of claim 3 attached to a launchable missile having a bottom firing end and disposed inside a launch



tube, said structural member being a shock isolator pad liner, said liner circumferentially contacting the inside of the launch tube and being effective to support the missile in an aligned position and provide shock mitigation generated during firing of the missile.

4,604,941

EMERGENCY CHAMBERING DEVICE

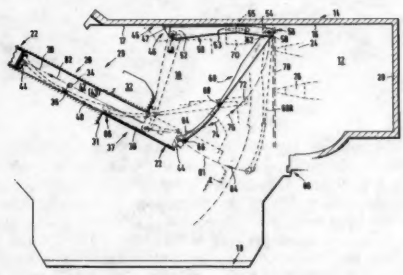
Erich Zielinski, Haan, and Harry Meschke, Düsseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 421,095, Sep. 22, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 671,047

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137850

Int. Cl.[4] F41F *17/16*

U.S. Cl. 89—47 **16 Claims**



1. Manually actuable emergency chambering device for a system including a gun disposed in a closed operator housing and having a large caliber barrel provided with a loading end defining a loading chamber near the far end of which a shell is to be rammed, a loading tray disposed adjacent the loading end of the barrel, and means for pivotably mounting the barrel about a horizontal trunnion axis but permitting the barrel to move linearly with respect thereto when the gun is fired, said device comprising:

a selectively manually deflectable rod assembly having a first end mounted for deflection movement relative to a first articulation region fixed relative to the trunnion axis and a second end spaced from said first end, said first articulation region presenting an articulation axis parallel to the trunnion axis and said rod assembly being deflectable at said first articulation region, between a rest position and an operating position, along a path lying in a plane that is parallel to the barrel bore axis;

selectively manually deflectable elongated element means,

having a front end and a rear end connected to said second end of said rod assembly to permit articulation movement between said elongated element means and said rod assembly at a second articulation region which is associated with said second end of said rod assembly and which presents an articulation axis parallel to the trunnion axis,

for bringing said front end into a first position, in which said front end rests against the rear surface of a shell supported on the loading tray while said rod assembly is in said rest position, when said elongated element means is deflected at said second articulation region, and, while said front end of said elongated element means remains in contact with the rear surface of the shell,

for pushing the shell off of the loading tray and then through the loading chamber into a rammed position corresponding to the operating position of said rod assembly when said rod assembly is deflected at said first articulation region from said rest position toward said operating position so that the second end of the rod assembly moves toward the trunnion axis; and

a roller rotatably mounted at said front end of said elongated element means for reducing friction between said front end and the surface of the loading tray and with the interior of the barrel.

4,604,942

BOLT ASSEMBLY WITH A ROTATING LOCKING BOLT HEAD AND A FLOATING BOLT ELEMENT FOR AUTOMATIC FIREARMS

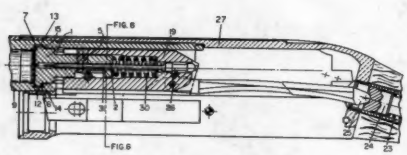
Paolo Benelli, Pesaro, Italy, assignor to Benelli Armi S.p.A., Urbino, Italy

Filed Apr. 19, 1984, Ser. No. 602,219

Claims priority, application Italy, May 9, 1983, 44019 A/83

Int. Cl.[4] F41D *3/06*

U.S. Cl. 89—185 **2 Claims**



1. A bolt assembly for an automatic firearm which operates in an inertial mode using kinetic recoil energy comprising a barrel, a floating bolt element formed with a helical slot, a rotatable locking bolt head, a return spring interposed between the rotatable locking bolt head and the floating bolt element; the spring, rotatable locking bolt head and the floating bolt element in communication with the barrel, the rotatable locking bolt head formed with a cylindrical portion having two crescent shaped projections located at diametrically opposite points along the circumference of the cylindrical portion, the barrel formed with two diametrically opposite recesses associated with and shaped to correspond to the crescent shaped projections, a pair of grooves formed in the barrel, each groove associated with a recess such that the crescent shaped projections may enter and exit the grooves through the recesses, the grooves being staggered with respect to the recesses and having an angular extension such that the crescent shaped projections may enter and be retained within the grooves, the barrel formed with projecting edge guide grooves, the floating bolt element formed with projecting edges that are located in and guided by the projecting edge guide grooves, the locking bolt head including a shank having a lesser diameter than that of the cylindrical portion of the locking bolt head, a cavity formed in the floating bolt element for receiving the shank, the shank carrying a pin adapted to impart a rotary movement to the locking bolt head by engaging the helical slot formed in the floating bolt element, whereby the firearm is in a locked position when the crescent shaped projections of the cylindrical portion of the locking bolt head are retained within the associated grooves formed in the barrel by means of the return spring, whereby upon firing the firearm recoils, the floating bolt element maintains its position by means of the projecting edge guide grooves sliding over the projecting edges of the floating bolt element thereby compressing the return spring, the rotatable locking bolt head remaining in a locked position during compression of the return spring to provide a delay which permits the dissipation of pressures in the barrel after firing, the return spring upon being compressed to a predetermined level expands and exerts a force upon the floating bolt element causing the helical slot of the floating bolt element to impart a rotary movement to the rotatable locking bolt head through the pin carried by the shank, which causes the rotatable locking bolt head to disengage its projections from the associated grooves formed in the barrel causing the crescent shaped projections of the cylindrical portion of the rotatable locking bolt head to pass through the recesses formed in the barrel to put the firearm in an unlocked position to permit reloading.

4,604,943

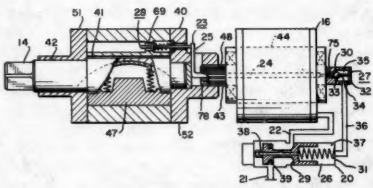
IMPULSE TOOL HAVING SHUT OFF SYSTEM

Reginald W. Pauley, Belle Mead, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 4, 1985, Ser. No. 697,953

Int. Cl.[4] F15B *15/00*

U.S. Cl. 91—59 **7 Claims**



1. A torque controlled air tool having an air motor connectable to an air pressure source, a rotatable spindle connected to the air motor, a means for rotating the spindle, and a shut-off means for controlling the rotating of the spindle to stop rotating of the spindle at a pre-selected torque level, said shut-off means comprising:

an activating means connected to the spindle for providing mechanical movement in response to the pre-selected torque level;

an arm having a first section extending along an axis and a second section extending away from said axis, said second section having a portion located adjacent the activating means and positioned so that movement by the activating means moves the arm; and

a means connecting to the arm at its first section for disconnecting the air pressure source from the air motor upon movement of the arm.

4,604,944

HOUSING OF PNEUMATIC BOOSTER DEVICE

Kaoru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 14, 1985, Ser. No. 744,566

Claims priority, application Japan, Jun. 22, 1984, 59-093931[U]

Int. Cl.[4] F16J *3/00*

U.S. Cl. 92—98 D **3 Claims**

1. A housing of a booster device of the type in that the inside space of the housing made elliptical in outer peripheral shape is divided by a diaphragm and a power piston into a constant-pressure chamber and a variable-pressure chamber,

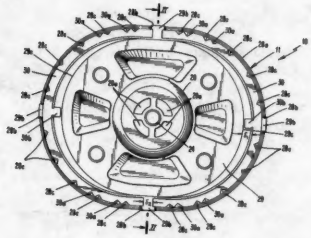
comprising a first shell made by subjecting a metallic plate to

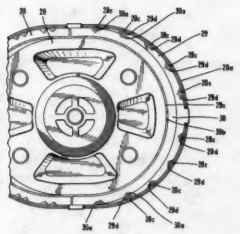
plastic working, and a second shell made by subjecting a metallic plate to plastic working and provided with a flange portion which is inserted in an opening portion of said first shell and clamped in place, and

characterized in that

on said flange portion of said second shell and on said opening portion of said first shell, mating abutting portions are formed respectively for limiting a depth of insertion of said second shell into said first shell,

in said flange portion of said second shell a plurality of notches extending from the outer periphery toward the center are formed which are distributed circumferentially and spaced from one another,





on said opening portion of said first shell a plurality of pawls are provided projectingly for clamping said flange portion of said second shell via a pair of U-shaped lock members disposed adjacent to the outside of said flange portion,

said pawls being aligned with said notches in the axial direction of said housing and made smaller than said notches,

between the inner periphery of said pair of lock members and said second shell and between opposite ends of both said lock members, gaps are left for permitting said lock members to slide a given extent,

in each of said lock members notches are formed to cancel a locked relation of said lock member with said pawls as said lock member slides a given extent, and

a stopper is incorporated for preventing sliding of said lock members in a normal state.

4,604,945

THERMALLY INSULATED PISTON

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

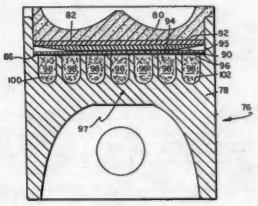
Division of Ser. No. 567,193, Dec. 30, 1983, Pat. No. 4,552,057.
This application Mar. 7, 1985, Ser. No. 709,144
Int. Cl.[4] F04B *31/08*
U.S. Cl. 92—176 **7 Claims**

1. A piston comprising:

(a) a cap portion having an inner planar surface and

(b) a body portion having a recess for receiving said cap portion, said recess having a first surface opposing said inner planar surface of said cap portion and,

(c) an interlayer between said inner planar surface of said cap and said first surface of said body portion, said interlayer having an outer knife edge, said cap portion and said interlayer being bonded together by a first brazing alloy, said interlayer and said body portion being bonded together by a combination of a second brazing alloy bonding



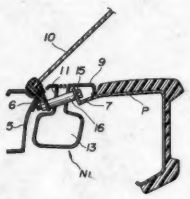
said interlayer to a steel disc and a third brazing alloy bonding said steel disc to said body portion wherein said body portion has a cellular portion adjacent to said interlayer comprised of cells filled with a thermal insulating material.

4,604,946

STRUCTURE OF DEFROSTER NOZZLE FOR AUTOMOTIVE VEHICLE

Takeaki Watanabe, Ebina, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 16, 1985, Ser. No. 734,688
Claims priority, application Japan, May 25, 1984, 59-104793
Int. Cl.[4] B60H *1/00*
U.S. Cl. 98—2.09 **6 Claims**



1. A structure of a defroster nozzle for an automotive vehicle, comprising:

(a) means for directing heated air derived from air heating means of the vehicle along the entire lower edge of a rear surface of a windshield, said heated air directing means comprising a nozzle port and duct for directing air flow from said air heating means to said nozzle port, wherein said nozzle port and said duct extend along substantially the lower edge of the rear surface of the windshield and comprise a single, continuous elongated shape; and

(b) means passing through a part of said air-directing means for attaching an instrument panel to a portion of a vehicle body.

4,604,947

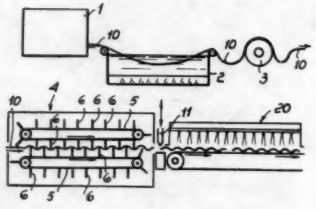
APPARATUS FOR PRODUCING SHAPED DOUGH PRODUCTS

Mario Pavan, Via Montegrappa, 10, Galliera Veneta, Italy

Division of Ser. No. 262,725, May 11, 1981, Pat. No. 4,515,817.
This application Feb. 26, 1985, Ser. No. 705,830
Claims priority, application Italy, May 15, 1980, 22096 A/80
Int. Cl.[4] A47J *37/00*
U.S. Cl. 99—353 **3 Claims**

1. A system for producing a shaped dough product compris-

ing in succession a dough sheet producing station, a tank for pre-cooking said dough sheet for instantaneization and for containing water at substantially 100° C., a dough sheet shaping station, a station whereat said dough sheet is cut to a desired size, and a final dough sheet drying station, wherein said dough sheet shaping station includes a pair of conveyor belts



arranged in side-by-side relationship and defining passage for said dough sheet therebetween, each said conveyor belts having vanes extending substantially perpendicular to the plane defined by the respective conveyor belt and being arranged offset to each other to exert alternative transverse pressing actions on and thereby shaping a dough sheet being caused to pass through a gap between said conveyor belts.

4,604,948

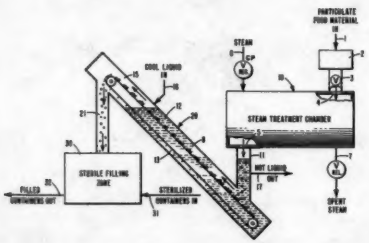
CONTINUOUS FOOD STERILIZATION SYSTEM WITH HYDROSTATIC SEALED TREATMENT CHAMBER

Stephen L. Goldhahn, Stratford, N.J., assignor to Campbell Soup Company, Camden, N.J.

Division of Ser. No. 501,821, Jun. 7, 1983, Pat. No. 4,547,383. This application Jul. 22, 1985, Ser. No. 757,304

Int. Cl.[4] A23L *3/16*

U.S. Cl. 99—470 **3 Claims**



1. An apparatus for continuously heat treating particulate food material by direct contact with super-atmospheric steam comprising:

(a) a pressurized steam treatment chamber having (i) a pressure-tight inlet opening through which particulate food material is fed into the treatment chamber, (ii) means for feeding pressurized steam into the treatment chamber, (iii) means for discharging spent steam from the treatment chamber, (iv) an outlet opening for discharging hot particulate food material from the treatment chamber and (v) means for transporting food material through the treatment chamber from the inlet opening to the outlet opening;

(b) hydrostatic sealing means sealing said outlet opening, said hydrostatic sealing means comprising a hydrostatic pressure column filled with a liquid, said liquid filled hydrostatic column in communication with the outlet opening and with a region of lower pressure, said liquid filled column having a height in the range of about 20 to about 130 feet, said liquid filled column balancing a steam pressure in said pressurized steam treatment chamber within the range of about 10 to about 55 psig, said liquid constituting a broth for the particulate food material;

(c) means for cooling said liquid in said hydrostatic sealing means; and

(d) means for conveying food material discharged from said treatment chamber through said hydrostatic sealing means to said region of lower pressure for gradually cooling and depressurizing said hot particulate food material discharged from the treatment chamber so as to avoid flashing and loss of structural integrity while simultaneously avoiding the extraction of valuable components from the food material.

4,604,949

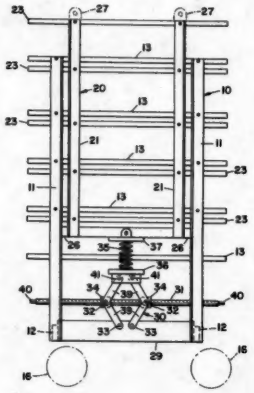
MEAT PRESS

John D. Giese, Berkeley, Calif., assignor to Mepaco, Inc., Oakland, Calif.

Filed Nov. 20, 1984, Ser. No. 673,899

Int. Cl.[4] A22C *7/00*; B30B *7/02*

U.S. Cl. 100—194 **4 Claims**



1. A meat press comprising:

a first frame having a horizontal meat support tray held between vertical columns,

a second frame having a horizontal meat pressing tray held between vertical columns, the vertical columns of said second frame being formed to be vertically moveable with respect to the columns of said first frame when said pressing tray is vertically aligned above said support tray,

a spring assembly connected at one end to said first frame and at the other end to said second frame, said spring assembly including a spring and means to vary the force exerted by said spring when said first frame and said second frame are in contact with meat to be pressed.

4,604,950

WORM GEAR RACK MOVEMENT SYSTEM

Paul R. Sette, Hamden, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 4, 1984, Ser. No. 657,703

Int. Cl.[4] B41J *1/34*; B41K *3/08*

U.S. Cl. 101—110 **4 Claims**

1. A postage meter for printing selected value amounts on a print receiving surface, comprising:

a support,

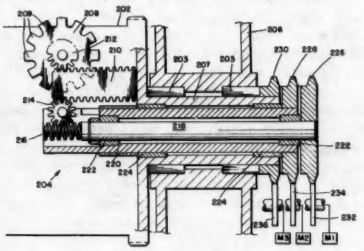
a plurality of value print devices mounted on said support, said devices each having a plurality of value print elements and being selectively movable to align selected value print elements,

means for driving said support to move selected value print

elements through a printing position to form an imprint on a said print receiving surface,

a plurality of axially displaceable racks, arranged in a group and connected to respective value print devices for adjusting same,

rack displacement means engageable with said racks one at a time for moving said racks to adjust the associated value



print devices, said racks being disposed in an annular array around said rack displacement means,

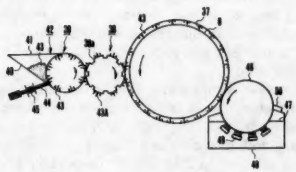
means for shifting said rack displacement means from rack to rack to selectively engage said rack displacement means with respective said racks, and

means for driving said rack displacement means and said rack-to-rack shifting means.

4,604,951
INTAGLIO PRINTING MACHINE

Ieyasu Ichikawa, Machida, and Shigeji Arai, Matsudo, both of Japan, assignors to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1985, Ser. No. 763,383
Claims priority, application Japan, Sep. 3, 1984, 59-182573
Int. Cl.⁴ B41F *9/00, 31/26*
U.S. Cl. 101—153 **5 Claims**



1. An intaglio printing machine including a plate cylinder having plate means thereon, said plate means having ink holding recesses of different depths, a pattern roller having projections which are in rolling contact with an outer surface of said plate means, and an inking unit with a duct roller which is in rolling contact with said pattern roller, wherein said duct roller has substantially the same diameter as a diameter of said pattern roller which includes said projections, and ink holding recesses having different depths corresponding to those of said plate means are formed in an outer surface of said duct roller along circumferential and axial directions thereof.

4,604,952
QUICK DRYING FOUNTAIN SOLUTIONS

John W. Daugherty, Fairlawn, N.J., assignor to Inmont Corporation, Clifton, N.J.

Division of Ser. No. 610,722, May 16, 1984. This application Jun. 14, 1985, Ser. No. 728,641
Int. Cl.⁴ B41M *1/06*
U.S. Cl. 101—451 **6 Claims**

1. In a method of lithographic printing, comprising:

(a) transferring a water based fountain solution to a lithographic plate,

(b) then transferring at least one lithographic ink to said plate,

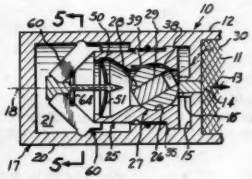
(c) transferring said ink from said plate to a blanket roll, and

(d) then transferring said ink from said roll to a substrate thereby producing a printed image, wherein the improvement comprises the inclusion of about 0.005 wt. % to about 5.0 wt. % of hydrogen peroxide in the fountain solution for the purpose of quick drying, thereby producing a decrease in the drying time of the ink.

4,604,953
VOID-SENSING FUZE

Donald E. Olander, Westminster, and Harold J. Woods, Lomita, both of Calif., assignors to Hi-Shear Corporation, Torrance, Calif.

Filed Apr. 26, 1984, Ser. No. 604,066
Int. Cl.⁴ F42C *1/08, 15/04, 15/22*
U.S. Cl. 102—272 **14 Claims**



1. A fuze adapted to fire after termination of mechanical impact forces, said fuze having an axis of forward motion, and comprising:

a fuze case having an axial internal cavity;

a second case in said cavity adapted for motion relative to said fuze case along said axis,

safety means carried by said second case preventing initiation until released;

detonator means carried by said second case;

limit stop means on said cases which cooperate to limit the movement of the second case relative to the fuze case in an axial direction opposite from said forward motion;

a commit latch between said cases adapted to permit said second case to move relative to the fuze case in the direction of forward motion, from a first position defined by the limit stop means to a second position spaced therefrom, and to latch said cases together in said second position when said second position is attained;

a firing pin axially movable along said cavity axis, said firing pin having a shaft, and a first end;

a firing pin spring interposed between said firing pin and said second case adapted to be deflected so as upon release to drive said firing pin toward said second case;

a sear carried by said fuze case in said cavity, said sear being engageable with said firing pin tending, when engaged to hold said firing pin away from said second case, and releaseable therefrom when said second case moves to its said second position whereby to release said firing pin;

whereby during forward flight, said safety means is disengaged;

whereby upon impact, said rotor case moves to its second position, said firing pin pulls said firing pin spring to a

spring-loaded position, and said commit latch locks said rotor case in its second position, said sear continuing to engage said firing pin, and

whereby upon cessation of impact forces said sear is disengaged from said firing pin, and said firing pin spring propels said firing pin toward said detonator to strike and initiate it.

4,604,954

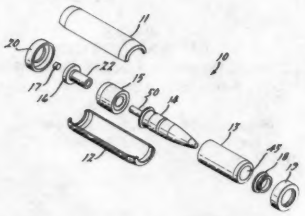
TELESCOPED AMMUNITION WITH DUAL SPLIT CARTRIDGE CASE

Stephen E. Clarke, Orange; James D. Hendry, Huntington Beach, and Ernest R. Mijares, Sunset Beach, all of Calif., assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Oct. 22, 1984, Ser. No. 663,645

Int. Cl.[4] F42B *5/02*

U.S. Cl. 102—434 **10 Claims**



1. A telescoped ammunition round comprising:

a propellant charge means having an axial cavity and supplying firing power for said ammunition round;

a projectile means housed within said cavity for being fired from said ammunition round;

a generally tubular casing means surrounding said propellant charge means and having two longitudinal splits dividing said casing means into two substantially identical halves so as to separate during firing and sustain pressure created by said propellant charge means without deforming; and

first and second end cap means for providing a gas seal during firing of said ammunition round in a chamber and for coupling adjacent ends of said halves of said tubular cavity to each other, and first end cap means coupling the two adjacent ends of said halves at the forward end of said projectile means and having a central opening for passing said projectile means when said projectile means is fired, and said second end cap means coupling the two adjacent ends of said halves at the rearward end of said projectile means and cooperates to close off the rear of said telescoped ammunition round with respect to said projectile means.

4,604,955

HEIGHT-ADJUSTABLE TABLE FOR WORK PLACES WITH VIDEO SCREEN

Joachim Fleischer, and Willy Fleischer, both of Essen, Fed. Rep. of Germany, assignors to Willy Fleischer Metallwarenfabrik GmbH & Co., Bochum, Fed. Rep. of Germany

PCT No. PCT/EP82/00220, § 371 Date Jun. 2, 1983, § 102(e) Date Jun. 2, 1983, PCT Pub. No. WO83/01183, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 2, 1982, Ser. No. 509,434

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 8128983[U]

Int. Cl.[4] A47B *9/00*

U.S. Cl. 108—147 **5 Claims**

1. A height-adjustable stand for a work place with a video monitor and a keyboard, the stand having a pair of horizontally spaced opposite sides and comprising:

respective back telescoping columns at the sides and provided with lower portions and upper portions vertically telescoping with said lower portions;

a video-monitor table supported on the upper portions of the back columns and extending between the sides;

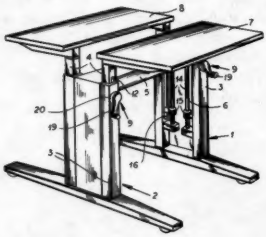
respective front columns adjacent the back columns at the respective sides and having lower portions and upper portions telescoping within the latter lower portions;

a keyboard plate supported on the upper portions of the front columns adjacent the video-monitor table;

a horizontal crossbar connecting the lower portions of said columns on one of the sides with the lower portions of the columns of the other side of said stand, the upper portions of the columns supporting said video-monitor table being adjustable independently as to height with respect to the upper portions of the columns supporting the keyboard plate; and

actuating means on said sides at least partly concealed by said columns for adjusting said upper portions, the actuating means including:

respective upright front and back spindles at each of the sides,



respective means coupling the front spindles to the upper portions of the respective front columns and the rear spindles to the upper portions of the respective rear columns for vertically displacing same on rotation of the respective spindles,

front link means operatively connecting the front spindles together for joint rotation,

rear link means operatively connecting the rear spindles together for joint rotation,

respective driving shafts at the stand sides horizontally traversing both the upper and lower portions of the front columns, the upper portions of each front column being formed with a vertically elongated oblong hole through which the respective shaft passes and of a length at least equal to the travel of the respective upper portion, and

means including an input gear on each of the shafts and an output gear at each of the sides on one of the respective spindles and meshing with the respective input gear for raising and lowering said upper portions of said columns, each of said lower portions fully enclosing the respective upper portion except where each upper portion stands out of the top of the respective lower portion.

4,604,956

ADJUSTMENT MECHANISM FOR WORK STATION

Robert E. Grebel, Northboro; Robert K. Neunherz, Westminster, and David W. McGrath, Rochdale, all of Mass., assignors to Wright Line Inc., Worcester, Mass.

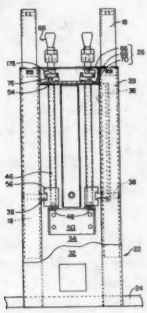
Filed May 18, 1984, Ser. No. 612,002

Int. Cl.[4] F16H *25/20*; A47B *9/12*

U.S. Cl. 108—147 **10 Claims**

1. In an adjustable height table comprising a pair of telescop-

ing table support and elevating assemblies each including a first stationary post and a second movable post, means securing said stationary posts in fixed spatial relation to each other, a table top secured to said movable posts so as to move therewith relative to said stationary posts, and a pair of synchronized post drive means for causing said movable posts to telescope up or down relative to said stationary posts, said post drive means each comprising a screw, means mounting said screw for rotation about its own axis, an elevating nut mounted on said screw so as to permit relative rotation between it and the screw, means holding said elevating nut against rotation as said screw is rotated, and a support pin connecting said elevating nut to the movable post of an adjacent one of said table support and elevating assemblies so as to cause said movable post to be telescoped relative to the stationary post of said adjacent table support and elevating the assembly as said screw is rotated,



the improvement wherein each of said nuts has a kerf located to one side and extending transversely of its center axis, said kerf being defined by a pair of parallel flat side surfaces and a flat bottom surface extending between said flat side surfaces, and further wherein each of said support pins has one end connected to one of said movable posts and an opposite end that extends into the kerf of one of said nuts and is movable in said kerf parallel to side surfaces, whereby said elevating nuts and said support pins are coupled so as to (a) cause said movable posts to move with said elevating nuts as said screws are turned and (b) allow said pins to shift in said kerfs relative to said elevating nuts as said screws are turned so as to accommodate and compensate for misalignment of said screws.

4,604,957

METHOD FOR WET COMBUSTION OF ORGANIC MATERIAL

Karl N. Cederquist, Stockholm, Sweden, assignor to Sunds Defibrator AB, Stockholm, Sweden

Continuation of Ser. No. 551,977, Nov. 5, 1983, abandoned. This application Feb. 20, 1985, Ser. No. 703,257

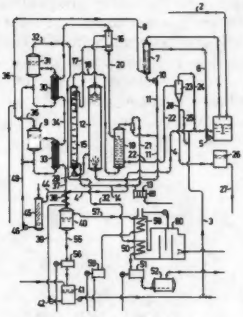
Int. Cl.[4] F23G *7/04*

U.S. Cl. 110—238 **2 Claims**

1. In the wet combustion method of combusting organic material including oxidation-resistant substances of lignocellulosic origin comprising low-molecular-weight acids which comprising the group including acetic acid proprionic acid or salts thereof, dissolved or suspended in a liquid comprising waste liquor obtained from wood pulping processes in which the organic material is oxidized by contact with air or oxygen at a temperature ranging between 180° C. and 340° C. and at a correspondingly superatmospheric pressure, the improvement comprising:

(a) a first oxidizing step, in which the organic material is partially oxidized by introducing into said liquid a molecular oxygen at a temperature and superatmospheric pressure and in an amount corresponding substantially to the theoretical value required to release a portion on the order of 75%–95% of the total heat value of said organic material;

(b) a second oxidizing step, in which high temperature superatmospheric molecular oxygen is introduced into said liquid in an amount in excess of the theoretical value



sufficient to oxidize the residual oxidation-resistant substances and to impart to the effluents generated in said second step a molecular oxygen content sufficient to achieve the partial oxidation in said first step; and

(c) feeding the thus oxygenated effluents to said first step.

4,604,958

FEED DRIVE FOR THE WORK HOLDER OF A ZIG-ZAG SEWING MACHINE

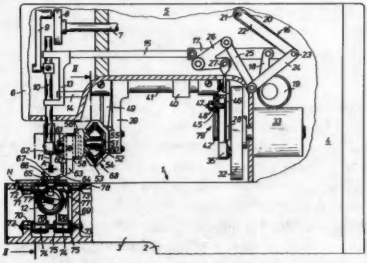
Edgar Busch, Trippstadt, and Ernst Albrecht, Hochspeyer, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,535

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 8424175[U]

Int. Cl.[4] D05B *3/00, 27/00*

U.S. Cl. 112—443 **5 Claims**



1. In a zig-zag stitch group sewing machine having a housing with a base portion, a standard portion extending upwardly from the base portion, an arm portion extending in a longitudinal direction outwardly from an upper portion of the standard portion, a head portion at the end of said arm portion, a needle bar mounted in said head portion for upward and downward reciprocating motion, the improvement comprising a driver movably mounted to said housing and engaged with said needle bar for moving said needle bar in a direction parallel to said longitudinal direction of said arm portion for swinging said needle bar in said longitudinal direction, a work holder mounted to said housing near said needle bar for holding and moving a workpiece on said base portion, a cam plate mounted

for rotation to said housing, cam plate drive means connected to said cam plate for rotating said cam plate, needle bar drive means operatively connected between said cam plate and said driver for moving said needle bar parallel to said longitudinal direction, work holder drive means operatively connected between said cam plate and said work holder for driving said work holder transversely to said longitudinal direction, a rectilinear guide arranged on said housing adjacent said head portion at a closely spaced location from said needle bar and engaged with said work holder for guiding said work holder for rectilinear motion transversely to said longitudinal direction, said work holder including a driver plate extending below said head portion and gripping the workpiece on said base portion from above.

4,604,959

WIND-PROPELLED CRAFT

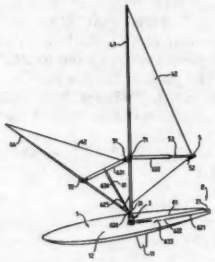
Michael J. Menear, 14 Lodge Way, Shepperton, Middlesex TW17 0RZ, England

Continuation of Ser. No. 397,947, Jul. 13, 1982, Pat. No. 4,478,164. This application Oct. 18, 1984, Ser. No. 662,086

The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.

Int. Cl.[4] B63H *9/04*; B63B *39/00*

U.S. Cl. 114—39 **11 Claims**



1. A sailboard comprising:

(a) a hull having an unstayed rig structure mounted thereon via a joint assembly which permits the rig structure to be pivoted about three mutually perpendicular axes,

(b) said rig structure including a pair of masts, each of which in use supports a sail, and

(c) means on said rig structure adapted to be grasped by a crew member so that a single crew member standing on the sailboard can rotate the rig as a unitary structure:

(i) about an approximately vertical axis to trim a first sail to the wind to provide forward propulsion,

(ii) about a first approximately horizontal axis to trim a second sail to the wind to provide upward lift at the leeward side of the sailboard to counter the rolling or heeling moment appled to the sailboard by the wind impinging on the first sail, and

(iii) about a second approximately horizontal axis from a first position in which a first mast extends substantially vertically and a second mast extends generally at right angles thereto away from the hull to a second position in which the second mast extends substantially vertically and the first mast extends generally at right angles thereto away from the hull.

4,604,960

APPARATUS FOR CLEANING UNDERWATER SURFACES

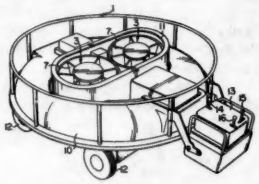
Kiyoshi Wachi, Machida, Japan, assignor to Macsea Marine Services Company, Inc., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,423

Claims priority, application Japan, Apr. 4, 1984, 59-49564[U]

Int. Cl.[4] B63B *59/00*

U.S. Cl. 114—222 **6 Claims**



1. An underwater cleaning apparatus, comprising:

at least one rotatable brush having a front side for contact with an underwater object to be cleaned and a rear side opposite said front side;

pump means for generating a water stream flowing from said front side to said rear side;

an annular tube surrounding said at least one brush and pump means; and

two immiscible liquids of respectively different specific gravities filling, freely flowably movable with respect to each other in, and hermetically sealed in said annular tube, so that the liquid having greater specific gravity moves downward in said annular tube relative to the other of said two liquids in synchronism with changes in the attitude of said apparatus, thereby to assist in attitude control and facilitate maintenance of a change in attitude of said apparatus.

4,604,961

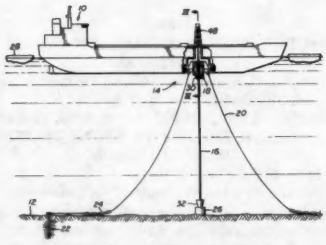
VESSEL MOORING SYSTEM

John E. Ortloff; Allen P. Ziarnik; John J. Filson, and John F. Gadbois, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jun. 11, 1984, Ser. No. 619,747

Int. Cl.[4] B63B *21/52*

U.S. Cl. 114—230 **36 Claims**



1. A vessel having a detachable vessel mooring system, said vessel comprising:

a hull, said hull defining a mooring recess, said recess being situated intermediate the bow and stern of the vessel and being in a wholly submerged portion of said hull;

a buoyant mooring element sized to be situated within said submerged mooring recess;

a plurality of mooring lines extending between and connected to said mooring element and the ocean floor, said mooring lines being arranged so that as said mooring

element moves downward from said mooring recess, an increasing amount of each mooring line comes to rest on the ocean floor;

means for securing said mooring element within said mooring recess;

means for permitting the vessel to pivot about the mooring element along a substantially vertical axis;

means for releasing said mooring element from said vessel; and,

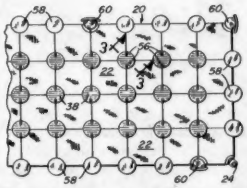
said mooring element being adapted to sink upon being released from said vessel to an equilibrium position above the ocean floor at which the buoyancy of the mooring element is balanced by the loading imposed on the mooring element, the loading on said mooring element decreasing with increasing depth due to increasing amounts of said mooring lines resting on the ocean floor.

4,604,962

MODULAR FLOATING DOCK

Denis Guibault, 5285 des Tilleuls St., Montreal, Canada (H1T 2H7)

Filed Jan. 28, 1985, Ser. No. 695,378
Int. Cl.[4] B63B *3/08*
U.S. Cl. 114—266 **4 Claims**



1. A floating dock comprising a plurality of similar floating units detachably interconnected, each floating unit comprising a floatable substantially polygonal body provided with bevelled corners, eye lugs horizontally projecting from each corner at different levels for overlapping with eye lugs of adjoining floating units linked therewith, the lowermost lug of each floating unit having lateral and parallel longitudinally-extending grooves at the top longitudinal corners thereof, a bolt having an externally-threaded spindle portion insertable through the registering eyes of at least two superposed lugs of adjacent floating units, a nut screwable on said bolt spindle from underneath the lowermost lug of superposed lugs, said nut having upstanding parallel flanges, of L-shape cross-section, slidably engageable within said grooves of said lowermost lug, said flanges holding said nut onto said lowermost lug and preventing said nut from rotating with respect to said lowermost lug, each corner of said floating unit forming a top concave and downwardly-converging surface portion, and said bolt having an enlarged head, of generally frusto-conical shape, matching and frictionally engaging said top concave corner surface portions, each lug having at least one notch extending across the periphery of the eye thereof, some of said lugs being exposed along the sides of said dock, and further including bumpers attached to at least some of said exposed lugs, said bumpers including a threaded spindle and an enlarged head, said spindle adapted to extend through the eye of said exposed lugs and attached thereto by a nut screwed on the threaded spindle of the bumper; a portion of said bumper spindle having at least one longitudinal ridge slidably fitting within the notch of the eye lug to prevent its rotation during screwing of said last-named nut, the bumpers forming an enlarged head for said spindle, said enlarged bumper head defining a half-portion with a frusto-conical part adapted to fit against the matching top concave corner surface portions of two adjacent floating units, the other half-part of the humper head being of generally half-cylindrical shape and protruding from the side of the dock.

4,604,963

DIGITAL GRAPHIC IMAGE ANALYZER

James A. Kirkham, 2817 Xerxes Ave. S., Minneapolis, Minn. 55416

Filed Nov. 30, 1984, Ser. No. 676,832
Int. Cl.[4] G01J *3/52*
U.S. Cl. 116—300 **25 Claims**

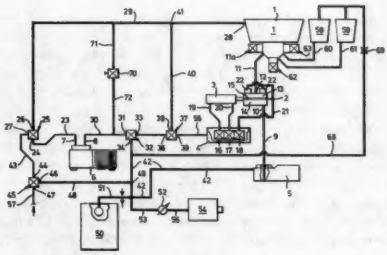
1. An apparatus for use in analysis of an image having a plurality of varying shades of grey and providing information for selected portions of the plurality of varying shades of grey comprising: first means having an edge, a scale of readable indicia on the first means extended along said edge, second means located adjacent said first means, a reference greyscale of varying shades of grey from black to white on the second means, at least a portion of the greyscale being visible adjacent said edge whereby the greyscale can be compared with the scale of readable indicia, said reference greyscale having a reference line and said greyscale diverging from an apex point located on said reference line away from opposite sides of the reference line, said first and second means being movable relative to each other whereby the portion of the greyscale visible adjacent said edge is repositioned relative to the scale of readable indicia whereby said readable indicia provides information for analysis of said image having a plurality of shades of grey.

4,604,964

TISSUE PROCESSING APPARATUS

Alan J. Gordon, Liverpool; David W. Sterritt, Warrington, and Robert Evans, Liverpool, all of England, assignors to Shandon Southern Products Limited, Runcorn, England

Continuation of Ser. No. 426,913, Sep. 29, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 701,818
Claims priority, application United Kingdom, Oct. 20, 1981, 8131663
Int. Cl.[4] B05C *3/02*
U.S. Cl. 118—50 **18 Claims**



1. A tissue processing apparatus, comprising:

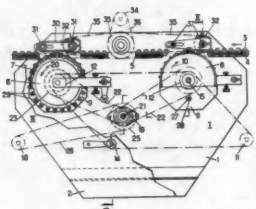
a processing chamber for processing a tissue specimen;
a plurality of reagent containers;
a selector valve interconnected with said reagent containers and with said processing chamber for creating a fluid conduit between a selected reagent container and said processing chamber;
a pump having a suction port and a pressure port and adaptable to provide both a vacuum and a compressed gas; and
changeover valve means interconnected with said pump, with said processing chamber and with said reagent containers, said changeover valve means having first and second selectable operative conditions, said first selectable operative condition connecting said suction port of said pump with said processing chamber and said pressure port of said pump with said reagent containers, and said second selectable operative condition connecting said suction port of said pump with said reagent containers and said pressure port of said pump with said processing chamber, thereby in each said operative condition to establish a closed circuit comprising said pump, said processing chamber, said fluid conduit and said selected reagent container;
whereby operation of said pump with said changeover valve means in said first operative condition enables transfer of reagent from said selected reagent container through said fluid conduit to said processing chamber, whereas operation of said pump with said changeover valve means in said second operative condition enables transfer of reagent from said processing chamber through said fluid conduit to said selected reagent container, and in each said operative condition without providing communication between the atmosphere external to said closed circuit and any one of said pump, said processing chamber or said reagent containers.

4,604,965

APPARATUS FOR DEPOSITING A RING OF MATERIAL ON THE TIPS OF AMPOULES OR THE LIKE

Claude Dehais, 35, rue Godot de Mauroy, 75009 Paris, France

Filed Mar. 9, 1984, Ser. No. 587,960
Claims priority, application France, Mar. 10, 1983, 83 03947; Dec. 13, 1983, 83 19939
Int. Cl.[4] B05C *1/02*
U.S. Cl. 118—219 **10 Claims**



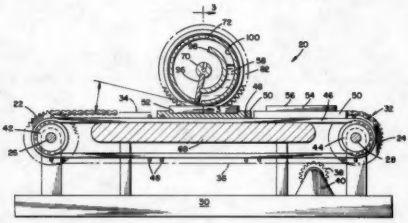
1. A machine for depositing a ring of plastic material on the tips of pharmaceutical ampoules or the like, which material is pasty or liquid at the moment when it is deposited on said tips and which subsequently hardens, comprising: advancing means for advancing said ampoules in a line, said ampoules being disposed perpendicularly to the direction of their advance; at least one reservior containing said plastic material; transfer means for transferring said plastic material between said reservoir and at least one of the tips of said ampoules, said transfer means comprising a rotary disk with an essentially horizontal axis, the lower part of which disk bathes in said reservoir, said advancing means including means for bringing each advancing ampoule tip into contact with the emerging part of the edge of the disk; and drive means for rotating the ampoules about their axes, at least at the moment when their tips are being coated with said material, said advancing means comprising transporting chains or the like having members for individually driving the ampoules, and at least one wheel having peripheral cups, each of which cups supports an ampoule, at least at the time of coating that ampoule, the peripheral speed of said cups being the same as the advancing speed of said chains.

4,604,966

CONTINUOUS SOLDER PASTE DISPENSER

Harold Kohn, Endwell, N.Y., assignor to International Business Machine Corp., Armonk, N.Y.

Filed Oct. 10, 1985, Ser. No. 786,225
Int. Cl.[4] B05C *5/02*
U.S. Cl. 118—406 **12 Claims**



1. Apparatus for applying solder paste to printed circuit boards in a continuous operation comprising:
a receptacle for containing solder paste, said receptacle being positioned above a work station and having an inlet for receiving the solder paste therethrough, an outlet for discharging the solder paste at the work station, and a passageway connecting the inlet to the outlet;
support means mounting said receptacle above the work station;
drive means for advancing a printed circuit board through the work station so that it can receive thereon the solder paste from said receptacle;
stencil means defining a desired pattern of the solder to be applied to the printed circuit board, said stencil means being mounted on said receptacle overlying the outlet and movable relative thereto in a timed relationship with movement of the printed circuit board; and
a rigid squeegee blade defining a boundary of said passageway integral with said support means and lying generally in a vertical plane and having a forward face and a lower edge extending into the outlet and having a resilient pad fixed on the lower regions of said forward face and extending beyond said lower edge;
whereby the solder paste in said receptacle is caused to flow by gravity and by vibration occurring with operation of said apparatus through said passageway against said squeegee blade including said pad, said pad being operable, by reason of its resiliency, to drive the solder paste through said stencil and onto the printed circuit board, thereby creating a pattern of the solder paste on the printed circuit board as defined by said stencil means.

4,604,967

SYSTEM FOR UNIFORMLY DISPENSING A PASTE MATERIAL TO A SEAL EDGE

Leonard P. Wilbur, Jr., and Wallace B. Anthony, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 26, 1984, Ser. No. 654,485
Int. Cl.[4] B05C *5/02*
U.S. Cl. 118—668 **5 Claims**

1. A system for uniformly dispensing a paste material to the seal edge of a rotating, rounded corner, substantially rectangu-

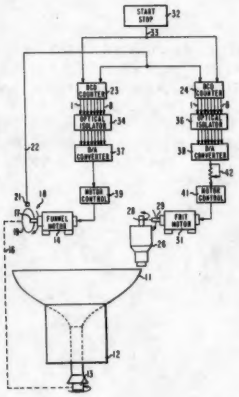
lar object, from a dispensing apparatus having a feed screw, said system comprising:

first means for rotating said object;

pulse generator means responsive to said first means for rotating, said pulse generator means providing a preselected number of input pulses for each increment of rotation of said object;

second means for rotating said feed screw;

first pulse counter means for receiving said input pulses and



providing a plurality of first output pulses, said first means for rotating being responsive to said first output pulses whereby the speed of rotation of said first means for rotating is proportional to said first output pulses;

second pulse counter means for receiving said input pulses and providing a plurality of second output pulses, said second means for rotating being responsive to said second output pulses whereby the speed of rotation of said second means for rotating is proportional to said second output pulses.

4,604,968

INCREASING THE EFFICIENCY OF POULTRY PRODUCTION

Vern L. Christensen, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Continuation-in-part of Ser. No. 627,751, Jul. 5, 1984, abandoned. This application Jun. 26, 1985, Ser. No. 748,165

Int. Cl.[4] A01K *45/00*

U.S. Cl. 119—1 **18 Claims**

1. A method of increasing the efficiency of poultry production comprising injecting poultry eggs during late embryonic development with a substance that operates to augment the endogenous thyroid output of the embryos, said substance being injected at a time and in an amount effective to increase the efficiency of poultry production as measured by a favorable impact on at least one of the following: (i) hatchability rate, (ii) feed conversion rate, (iii) mature bird weight and (iv) mortality rate.

4,604,969

MILKING INFLATION INCLUDING AIR VENT

Leigh R. Larson, 100 Lincoln St., Johnson Creek, Wis. 53038

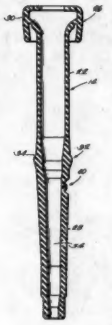
Filed Jun. 17, 1985, Ser. No. 745,201

Int. Cl.[4] A01J *5/04*

U.S. Cl. 119—14.36 **11 Claims**

1. A milking inflation for a teat cup assembly including a rigid shell, said inflation being made from an elastomeric material, having an upper portion located inside the shell for receiving a cow's teat, and having an elongated milking tube portion extending below the shell, said mailing tube portion including

an annular recess in the wall of said milking tube portion at a location near the lower end of the shell defining an isolated area and including a bottom portion having an



annular web section of reduced thickness surrounding said isolated area; and

an opening extending through said isolated area for admitting a metered amount of air into the interior said milking portion.

4,604,970

ANIMAL FEEDING METHOD AND APPARATUS

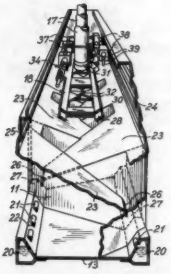
Steen Blicher, Dalkildegaard, DK-5600 Faaborg, Denmark

Filed Apr. 13, 1984, Ser. No. 599,759

Claims priority, application Denmark, Apr. 14, 1983, 1644/83

Int. Cl.[4] A01K *5/02*

U.S. Cl. 119—51 R **24 Claims**



1. A method of operating an animal feeding apparatus having dry feed or fodder supply means driven by a driving device for supplying amounts of dry feed or fodder to at least one animal feeding place, and liquid supply means for supplying aqueous liquid to each said feeding place, said method comprising:

(a) supplying the aqueous liquid to the driving device under superatmospheric pressure;

(b) using said aqueous liquid as a driving medium for operating the driving device to supply the dry feed or fodder to the feeding place in an amount substantially proportional to the amount of the aqueous liquid supplied to the driving device;

(c) discharging the aqueous liquid from the driving device after step (b); and

(d) dispensing all or a predetermined proportion of said liquid into the feeding place to produce a feed mixture

therein containing a predetermined proportion of said liquid and said dry feed or fodder.

4,604,971

INSECTICIDAL GROOMING ARTICLE

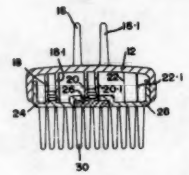
Rodney C. Baker, Kempton Park, and Philippus J. van Rensburg, Randburg, both of South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed Mar. 29, 1984, Ser. No. 594,531

Claims priority, application South Africa, Apr. 13, 1983, 83/2597

Int. Cl.[4] A01K *13/00*

U.S. Cl. 119—86 **6 Claims**



1. An article for grooming an animal which includes a hand-grippable portion and a plurality of teeth or bristles of plastics material attached to the hand-grippable portion, at least some of the teeth or bristles being moulded and flexible and containing, along at least a portion of the teeth or bristles, at least one insecticide, said insecticide being included in said plastics material when said teeth or bristles are moulded therefrom so that the insecticide is moulded therein with the plastics material yet is capable of blooming sufficiently, from the teeth or bristles onto the animal when the animal is groomed with the article, so as to have an insecticidal effect, said plastics material comprising a mouldable polymer and a plasticizer present in sufficient amount to permit effective blooming of the insecticide.

4,604,972

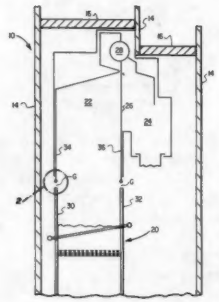
SEAL ASSEMBLY FOR A VAPOR GENERATOR

Alexander J. Difonzo, North Plainfield, and Venkatraman Seshamani, Gillette, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Mar. 11, 1985, Ser. No. 710,653

Int. Cl.[4] F22B *37/24*

U.S. Cl. 122—510 **4 Claims**



1. A seal assembly for a boiler, each wall of which has a lower portion and an upper portion spaced from said lower portion to accommodate relative movement between said portions, said seal assembly comprising a trough containing water connected to said upper portion of each wall; partition means having a first portion extending outwardly from said lower portion of each wall, a second portion extending from said first portion in a general parallel relation to said wall portions and across the space between said wall portions, and a third portion extending horizontally from said second portion towards said upper wall portion; and a dip skirt extending downwardly from said third partition portion and into said trough for accommodating said relative movement between said upper wall portion and said lower wall portion, and for dividing same into a first chamber containing water exposed to the boiler pressure and a second chamber containing water exposed to atmosphere.

4,604,973

EVAPORATIVE COOLED ENGINE HAVING MANUAL CONTROL FOR SERVICE FACILITATION

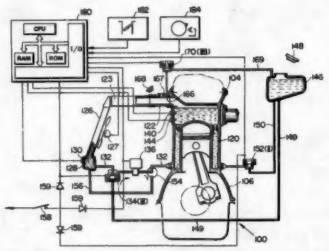
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 30, 1985, Ser. No. 739,288

Claims priority, application Japan, Jun. 18, 1984, 50-124777

Int. Cl.[4] F01P *9/02*

U.S. Cl. 123—41.21 **5 Claims**



1. In an internal combustion engine:

a structure subject to high heat flux; and

a cooling system comprising:

(a) a cooling circuit which includes:

a coolant jacket formed about said structure subject to high heat flux and into which coolant is introduced in liquid form, permitted to boil and discharged in gaseous form,

a radiator exposed to a cooling medium which can remove heat from said radiator,

a vapor transfer conduit leading from said coolant jacket to said radiator for transferring gaseous coolant from said coolant jacket to said radiator for condensation therein, and

means for returning coolant condensed to its liquid form in said radiator to said coolant jacket in a manner to maintain said structure immersed in a predetermined depth of liquid coolant, said coolant returning means taking the form of:

a coolant return conduit which leads from a lower portion of said radiator to said coolant jacket;

a pump disposed in said coolant return conduit,

a first level sensor disposed in said coolant jacket, said first level sensor being arranged to control said pump in a manner to maintain said structure immersed in said predetermined depth of liquid coolant, and

means defining a port in an upper portion of said cooling circuit, said port being closed by a manually removable member;

(b) a reservoir containing liquid coolant;

(c) valve and conduit means for controlling fluid communication between said reservoir and said cooling circuit, said valve and conduit means including:

a first valve disposed in said coolant return conduit between said radiator and said pump, and

a first conduit which leads from said reservoir to said first valve,

said first valve having a first state wherein communication

between said pump and said radiator is established and a second state wherein communication between said pump and said reservoir is established;

(d) a two position valve disposed in said coolant return conduit at a position between said pump and said coolant jacket; and

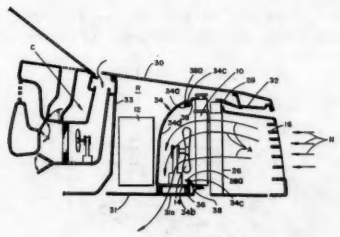
(e) a by-pass conduit leading from said coolant return conduit to said lower portion of said radiator, said two position valve having a first position wherein said pump is communicated with said coolant jacket and a second position wherein said pump is communicated with said lower portion of said radiator.

4,604,974

AIR GUIDE ARRANGEMENT IN ENGINE ROOM

Takeaki Watanabe, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 3, 1984, Ser. No. 637,567
Claims priority, application Japan, Aug. 8, 1983, 58-144723
Int. Cl.[4] F01P *9/04*
U.S. Cl. 123—41.57 4 Claims



1. In an engine cooling arrangement in an engine room of a vehicle, said arrangement including an air intake grill through which air is introduced into the engine room, a radiator located between said air intake grill and said engine permitting the air from said intake grill to pass through said radiator before reaching the engine and a motor-driven fan located in the vicinity of the radiator to positively produce air flow passing through said radiator,

an air guide arrangement comprising:

an air flow enclosure member removably disposed on an undercover of the engine room between said radiator and said engine to divert and guide the air flow which has passed through the radiator from contacting the engine, said enclosure member including a box-shaped body of generally wedge-like profile, said body having an inlet opening in a vertical side which faces the inboard side of said radiator, an outlet opening in a horizontal side which faces said undercover and a smoothly curved portion for smoothly guiding the air flow from said inlet opening toward said outlet opening;

means for detachably connecting said enclosure member adjacent the inboard side of said radiator so that air flowing through said radiator is guided into said inlet opening, the detachable connecting means permitting the removal of said enclosure member from the engine room whereby when the enclosure is removed air flowing through said radiator contacts the engine; and

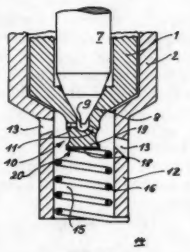
means defining a discharging opening in said undercover of the engine room facing said outlet opening of the air flow enclosure member, so that the air from said outlet opening is discharged from said discharging opening into the open air under said engine room.

4,604,975

APPARATUS FOR INJECTING FUEL INTO A SECONDARY FLOW OF COMBUSTION AIR FROM A COMBUSTION CHAMBER

Thomas Frey, Friolzheim; Werner Grünwald, Gerlingen; Ernst Imhof, Munchingen; Iwan Komaroff, Regensburg; Helmut Reüm; Günther Schmid, both of Stuttgart, and Kurt Schmid, Ditzingen-Schockingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE83/00212, § 371 Date Dec. 18, 1984, § 102(e) Date Dec. 18, 1984, PCT Pub. No. WO84/04359, PCT Pub. Date Nov. 8, 1984
PCT Filed Dec. 20, 1983, Ser. No. 692,450
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315241
Int. Cl.[4] F02B *9/08;* F02P *19/00*
U.S. Cl. 123—145 A 14 Claims



1. An apparatus for injecting fuel into a combustion chamber of an internal combustion engine, in particular a self-igniting internal combustion engine, having an injection nozzle which has injection openings disposed at an angle from the nozzle axis, through which openings laterally-oriented fuel streams emerge from outlets, characterized in that between said injection openings and said combustion chamber a partition is arranged to surround at least the lateral axis of said injection nozzle, said partition being spaced from said injection nozzle and provided with through openings aligned with said fuel streams, said partition containing at least one further opening to admit bypass combustion chamber air such that said partition acts as a guide device for bypassing combustion chamber air from said combustion chamber via said further opening and said through openings back to said combustion chamber whereby said fuel streams which are emitted at and through said through openings bring about an injector effect that accelerates combustion chamber air through said partition, and a heating device between said further opening and said through openings, said heating device being adapted to heat aspirated combustion air before said air passes into said through openings.

4,604,976

ROAD AND ENGINE SPEED GOVERNOR WITH LINEAR ACTUATOR

Harry D. Sturdy, Wilmington, N.C., assignor to Sturdy Truck Equipment, Inc., Wilmington, N.C.

Division of Ser. No. 459,345, Jan. 20, 1983, Pat. No. 4,523,564. This application Jan. 8, 1985, Ser. No. 689,729
Int. Cl.[4] F02D *11/10*
U.S. Cl. 123—361 2 Claims

1. For use in an engine speed governor for an engine having a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means, a control means responsive to engine speed for controlling the throttle closing means,

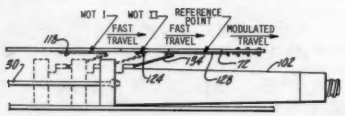
a linear actuator including a linearly movable actuator member,

a reversible electric motor,

a control circuit having plural inputs and including means for controlling the energization and speed of said motor in accordance with selected position of said actuator member,

drive means coupled between the motor and the actuator member for imparting reversible linear motion to the actuator member,

said actuator member being connected with the overriding throttle limiting means for positioning it to limit the throttle opening,



a switch plate disposed adjacent the actuator member and including plural fixed electrical contacts each of which is connected with one of said inputs of said control circuit,

a movable electrical contact carried by the actuator member and being selectively engageable with said fixed contacts, and

adjusting means for adjustably positioning said switch plate relative to said actuator member,

whereby the movable contact engages a selected fixed contat in accordance with the position of the actuator member to control said motor.

4,604,977

CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINES

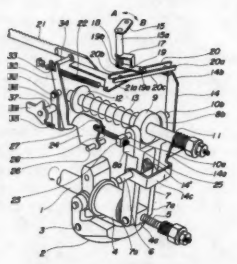
Masanori Ohnishi, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,413

Claims priority, application Japan, May 2, 1984, 59-64873[U]

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—365 **2 Claims**



1. A centrifugal governor for use with an internal combustion engine, comprising:

a control rack for regulating the quantity of fuel to be supplied to said engine;

flyweights radially displaceable in response to the rotational speed of said engine;

a tension lever pivotable about a stationary fulcrum in response to the radial displacement of said flyweights;

a torque cam having a cam surface determining a fuel increment to be applied at the start of said engine;

a sensor lever having one end engaged by said control rack and another end disposed for engagement with said cam surface of said torque cam, said sensor lever being adapted to engage with said cam surface of said torque cam when said engine is in a starting condition, to cause displacement of said control rack into a fuel increasing position for the start of said engine; and

spring means interposed between said torque cam and said tension lever and urging said torque cam with a force dependent upon the angularity of said tension lever in a direction of disengaging said sensor lever from said cam surface of said torque cam;

said spring means comprising first and second springs, one of said first and second springs being formed of a thermosensitive material having a smaller spring constant at a low temperature below a predetermined value, and a larger spring constant at a temperature above said predetermined value; and

said first and second springs of said spring means comprising coiled springs disposed concentrically with each other.

4,604,978

SPEED GOVERNOR FOR FUEL INJECTION PUMPS

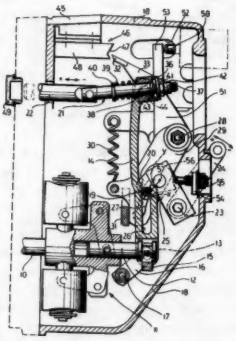
Sytze Brouwers, Woodridge, Ill.; Werner Brühmann, Stuttgart, and Heinz Kuschmierz, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,719

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1984, 3439277

Int. Cl.[4] F02D *1/04*

U.S. Cl. 123—374 **12 Claims**



1. A speed governor for fuel injection pumps for internal combustion engines including a housing, comprising a rpm-dependent adjusting member which is joined to a supply quantity control member via a governor lever pivotable about a guide shaft, said guide shaft being displaceable by an arbitrarily actuatable adjusting lever along said governor lever to vary the speed droop of said governor and to preselect the rpm to be governed, said guide shaft being displaceable along a curve of a cam plate that is retainable in a basic position by a spring, said cam plate being pivotable about a pin integral with said housing, said guide shaft further being displaceable into a position assuring a minimum idling rpm by means of a movement-coupling member upon adjustment of said cam plate to produce a lower maximum rpm, said movement-coupling member further including a stop plate, said stop plate being disposed on a shaft of said adjusting lever parallel to said cam plate, and means for reducing the full-load and maximum rpm by swiveling said cam plate counter to the force of the said spring in accordance with an operating parameter acting independently of the rpm governor.

4,604,979

ELECTRONICALLY CONTROLLED DISTRIBUTOR TYPE FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

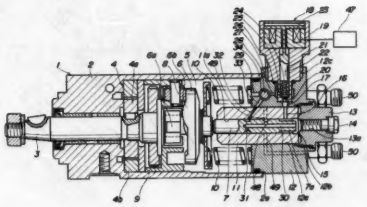
Tadashi Kobayashi; Shinya Nozaki, and Keiichi Yamada, all of Higashi-matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 718,806

Claims priority, application Japan, Apr. 5, 1984, 59-49875[U]

Int. Cl.[4] F02M *59/20*

U.S. Cl. 123—449 **5 Claims**



1. A distributor type fuel injection pump for an internal combustion engine, comprising: a suction space filled with fuel under pressure variable as a function of the rotational speed of said engine; a plunger driven by said engine for concurrent reciprocating and rotative motion to effect suction of fuel from said suction space into a pump working chamber defined by said plunger at one end thereof, pressure delivery of fuel from said pump working chamber and distribution of the fuel into cylinders of said engine; a plurality of suction ports formed in said plunger and identical in number with the cylinders of said engine, said suction ports communicating with said pump working chamber; a first communication passageway communicating said suction space with said pump working chamber; a second communication passageway having a restriction therein, said second communication passageway being disposed to sequentially register with said suction ports as said plunger rotates for communicating said suction space with each of said suction ports that registers with said second communication passageway; a solenoid valve disposed to selectively open and close said first communication passageway; a selector valve operable to assume, independently of the opening and closing action of said solenoid valve, a first valve position wherein said first communication passageway is closed and simultaneously said second communication passageway is opened, at the start of said engine, and a second valve position wherein said second communication passageway is closed and simultaneously said first communication passageway is opened, during operation of said engine other than at the start of said engine; and control means operable in response to operating conditions of said engine to control said solenoid valve to alternately open and close so as to achieve required fuel injection quantity and required injection timing.

4,604,980

FUEL INJECTION PUMP

Jean Leblanc, Lyons, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

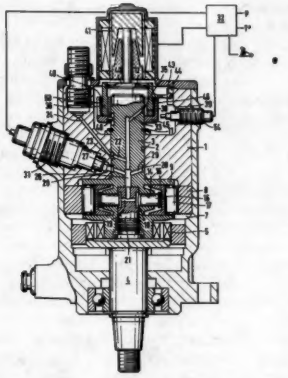
Filed Mar. 8, 1985, Ser. No. 709,957

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412834

Int. Cl.[4] F02M *41/00*

U.S. Cl. 123—450 **12 Claims**

1. A fuel injection pump having a housing, a bore in said housing at least one pump work chamber defined by a pump piston driven via a cam track, a distributor in said bore a pump work chamber in continuous communication with an opening provided in a jacket face of said distributor which rotates in said bore and is coupled with a drive shaft, said pump work chamber thereby being arranged to communicate during any given supply stroke of the pump piston successively with one of a plurality of injection lines distributed about the circumference of said bore via a longitudinal conduit in said distributor, said pump work chamber further being in continuous communication with a first control opening in said jacket face of said distributor, wherein the said first control opening is arranged to communicate with means having a second control opening and positioned adjacent to said jacket face of said distributor, said means adapted to communicate with a low fuel pressure chamber, an electrically controlled switching valve connected with a fuel supply line extending from a fuel supply, said electrically controlled switching valve controlling flow of fuel from said fuel supply line through said switching valve to said



longitudinal conduit in said distributor during each cycle of operation and also communicate with said pump work chamber during the intake stroke of at least one pump piston, a control unit means for controlling said electrically controlled switching valve whereby said switching valve is opened no later than the beginning of the intake stroke of said pump piston and is closed at the end of a metering stroke to thereby determine the filling quantity of the work chamber prior to the onset of the supply stroke and said distributor further including an end means arranged to protrude out of said bore, said end means including said first control opening, an annular slide encompassing said first control opening and including said second control opening, and means for adjusting said annular slide and said first control opening.

4,604,981

INJECTION TIMING DEVICE

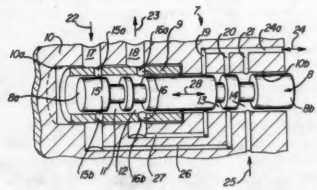
Jean-Louis Dazzi, 52 Rue des Collonges, Saint Genis Laval - Rhone, France

Filed Jul. 20, 1983, Ser. No. 516,114

Claims priority, application France, Jul. 22, 1982, 82 13138

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—451 **8 Claims**



1. A fuel injection timing device for insertion in the high

pressure fuel circuit of an internal combustion engine, and for controlling the operation of a fuel injection needle, said fuel injection timing device comprising:

a manifold comprising:

a longitudinally extending bore having an enlarged portion;

a pair of transversely extending passages communicating with said longitudinally extending bore;

three additional spaced apart transverse passages communicating with said longitudinally extending bore; and

at least one internal passage connecting said three additional spaced apart transverse passages to the rear of said fuel injection needle, the third of said three additional passages being connected to said high pressure fuel circuit for the flow of fuel from said high pressure fuel circuit to said fuel injection needle through said manifold;

a sleeve slidably mounted in said enlarged portion of said longitudinally extending bore of said manifold, said sleeve having a pair of spaced apart holes extending transversely therethrough, one of said pair of spaced apart holes communicating with said high pressure fuel circuit, the other of said pair of spaced apart holes communicating with a line for delivery of fuel to said engine; and means for slidably moving said sleeve in said enlarged portion of said longitudinally extending bore within said manifold such that said sliding movement of said sleeve selectively moves said pair of spaced apart holes in said sleeve into and out of alignment with said pair of transversely extending passages in said manifold to control the termination of the flow of fuel through said manifold; and

a sliding valve having one end slidably mounted within said sleeve; an opposite end slidably mounted within said longitudinally extending bore of said manifold; and means for slidably moving said sliding valve in said manifold, said one end comprising a pair of spaced apart grooves whereby said means for slidably moving selectively moves said pair of spaced apart grooves of said sliding valve into and out of alignment with said pair of spaced apart holes in said sleeve; said opposite end of said sleeve comprising a pair of spaced apart grooves such that as said means for slidably moving said sliding valve selectively moves said sliding valve, one of said pair of spaced apart grooves communicates with one of said three additional spaced apart transverse passages while the other of said pair of spaced apart grooves communicates with said second or said third of said three additional spaced apart transverse passages, the position of said pair of spaced apart grooves in said opposite end of said sliding valve with respect to said three additional spaced apart transverse passages in said manifold controlling the operation of said fuel injection needle to initiate the flow of fuel therethrough.

4,604,982

CONTROLLING AND SWITCHING MECHANISM

Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed Mar. 19, 1985, Ser. No. 713,878

Int. Cl.[4] F02M *51/00*

U.S. Cl. 123—477 **6 Claims**

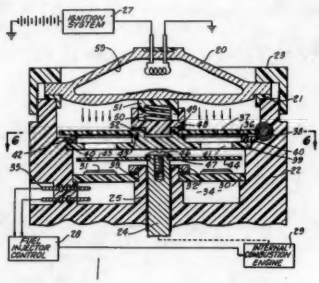
1. In a fuel injection system for an internal combustion engine, a controlling and switching mechanism using radiant energy for controlling the sequential operation of the fuel injectors, said mechanism comprising:

A source of radiant energy

A first element having a plurality of switching members which are activated by said radiant energy and fixed to said element, said members electrically connected in the circuit controlling their associated fuel injectors

A second element disposed between the source of radiant energy and said switching members, said second element having a plurality of apertures therein through which beams of radiant energy are directed, there being an aperture for each switching member; said second element adapted for optional rotation so that each beam of radiant energy emanating from each aperture and directed toward said first element can be shifted with respect to its associated switching member

A third element disposed intermediate said first and second element, said third element having an aperture therein and



rotating in timed relationship with the engine shaft, so that each switching member is activated by its associated beam by means of the rotating aperture in said third element; the duration of an energizing pulse when said switching member is activated, in degrees of engine shaft rotation, being a function of that part of the switching member illuminated by its associated beam of radiant energy.

4,604,983

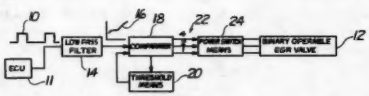
ANALOG DUTY CYCLE TO BCD CONVERTER

Ralph W. Carp, 90 Huxley Pl., Newport News, Va. 23606; Robert E. Weber, 978 Lacon Dr., Newport News, Va. 23602, and Danny O. Wright, 411 Dare Rd., Grafton, Va. 23692

Filed Apr. 9, 1985, Ser. No. 721,358

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—571 **6 Claims**



1. An analog duty cycle to BCD converter circuit for controlling a binary encoded EGR valve, the circuit comprising:

low pass active filter means for receiving a digitally encoded voltage signal and generating an analog voltage signal proportional thereto;

threshold means for generating a plurality of threshold voltages each representing a binary value;

comparator means for receiving said analog voltage signal and said threshold voltages and generating binary encoded analog signals proportional to the digitally encoded voltage signal; and

power switch means actuable in response to said binary encoded analog signals

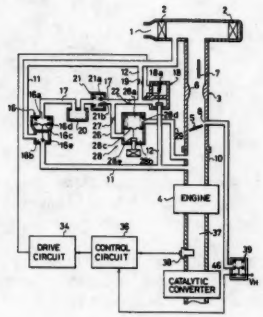
wherein said low pass filter means is a two pole active filter.

4,604,984

AIR INTAKE SIDE SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshinobu Isobe, Tokyo, and Hiroaki Iwasaki, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1985, Ser. No. 731,786
Claims priority, application Japan, May 16, 1984, 59-98269
Int. Cl.[4] F02M *23/04*
U.S. Cl. 123—589 3 Claims



1. An air intake side secondary air supply system for an internal combustion engine having a carburetor and intake air passage with a throttle valve, comprising:

an air-fuel ratio detection means for detecting an air-fuel ratio from an oxygen concentration of an exhaust gas of the engine and producing an air-fuel ratio signal;

a first air intake side secondary air supply passage leading to the intake air passage on downstream side of the carburetor and the throttle valve;

an air control valve disposed in said first air intake side secondary air supply passage and adapted to vary a sectional area of the first air intake side secondary air supply passage in accordance with a magnitude of a pressure supplied to a pressure chamber thereof;

a second air intake side secondary air supply passage leading to the intake air passage on downstream side of the carburetor and the throttle valve;

a first open/close valve disposed in said second air intake side secondary air supply passage and opening and closing same in accordance with a content of said air-fuel ratio signal;

a first air supply delay means disposed in said second air intake side secondary air supply passage, on upstream side of said first open/close valve;

a pressure supply passage for communicating said pressure chamber of said air control valve with a part of said second air intake side secondary air supply passage between said first open/close valve and said first air supply delay means;

a second air supply delay means disposed in said pressure supply passage; and

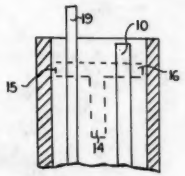
a pressure control means for supplying an air pressure for reducing an opening degree of said air control valve into said pressure supply passage between said second pressure supply delay means and said pressure chamber of the air control valve, during a predetermined operating condition of the engine.

4,604,985

FIRE ARM

Alexander Kulgevich, Brooklyn, N.Y., assignor to Naum Frayberg, Brooklyn, N.Y.

Filed Dec. 3, 1984, Ser. No. 677,576
Int. Cl.[4] F41B *7/00, 11/00*
U.S. Cl. 124—56 4 Claims



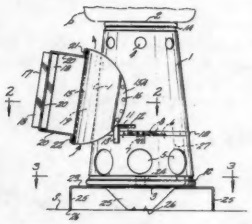
1. A fire arm, comprising a firing element having a muzzle and striking means; at least one element to be fired and formed as a boomerang, wherein said striking means is formed so as to deliver a stronger strike against one of said legs and a weaker against the other of said side legs of said boomerang.

4,604,986

BRIQUET STARTER AND OUTDOOR STOVE

Bruce L. Barnes, 2335 N. 31st, Springfield, Oreg. 97478

Filed Nov. 13, 1984, Ser. No. 670,570
Int. Cl.[4] F24B *3/00*
U.S. Cl. 126—25 B 5 Claims



1. A briquet starter and outdoor stove comprising in combination,

a container of frustum shape and including grate means and defining an upper and a lower series of air vent openings,

a heat shield of curved section having upper and lower end portions and having a pair of flanges along its sides in place against the container exterior, means securing said flanges to said container, said heat shield of a length so as to extend along a major portion of the containers length, said curved heat shield defining an open area with the container and open at its upper and lower ends, to define an air passageway through which a convective air flow passes and

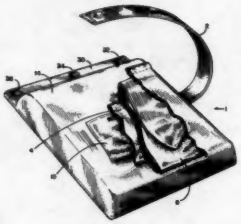
a handle oppositely disposed on said heat shield from said container and including a bracket terminating at its ends in securement to said upper and lower end portions of the heat shield remote from the side flange so as to isolate the handle from heat radiated from the container, said handle substantially equal in length to heat shield length.

4,604,987

HEATED STADIUM CUSHION

Heidi Keltner, 1905 Calle de Vega, Las Vegas, Nev. 89102

Filed Oct. 4, 1985, Ser. No. 784,553
Int. Cl.[4] A61F 7/00
U.S. Cl. 126—204 8 Claims



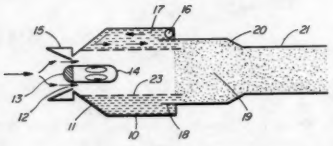
1. In combination, a heated cushion device comprising a foam pad enclosed in a unitary flexible casing, a first pocket attached to an exterior portion of the casing adapted to enclose a heating element, a second pocket attached to the casing adapted to enclose at least one article of weather-resistant clothing, handle means attached to the casing for carrying the device, said first pocket is located interior of said second pocket and an air-activated chemical heating element enclosed within said first pocket.

4,604,988

LIQUID VORTEX GAS CONTACTOR

Dandina N. Rao, Calgary, Canada, assignor to Budra Research Ltd., Calgary, Canada

Filed Mar. 19, 1984, Ser. No. 591,041
Int. Cl.[4] F24H 1/20
U.S. Cl. 126—360 A 29 Claims



1. A method for contacting a liquid with a gas comprising the steps of:

(a) continuously injecting said liquid through an inlet pipe into a hollow container and forming along the interior surface of said container a continuous, inertially rotating liquid vortex flow having a substantially liquid free core within said container; and

(b) passing a gas through said vortex core, whereby said gas contacts the inner surface of said liquid along said vortex core;

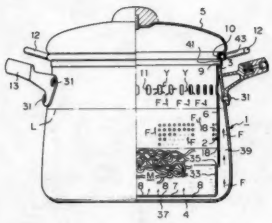
wherein said gas originates from a combustible mexture which is introduced into and is ignited to produce a flame within said vortex core said flame being substantially surrounded by, and in direct contact with, said rotating liquid.

4,604,989

COOKING VESSEL

Toshiyuki Kita, Osaka, Japan, assignor to Hokusei Nikkei Household Utensils Co., Ltd., Takaoka, Japan

Filed Feb. 20, 1985, Ser. No. 703,432
Claims priority, application Japan, Feb. 21, 1984, 59-22464[U]
Int. Cl.[4] F24D 1/00
U.S. Cl. 126—369 10 Claims



1. A cooking vessel comprising an inner container for holding a cooking material and an outer container for receiving the inner container, said inner and outer containers being sized to provide a circumferential space therebetween in the lower part of the vessel but that fit snugly together in the upper part of the vessel, said inner container being provided on its bottom and lower side circumference with a large number of holes for connecting the inside areas of the inner and outer containers and also being provided with a plurality of vertically elongated openings, relatively larger than said holes, spaced circumferentially around the upper part of the inner container above the normal level of water used in the vessel that connect the upper part of the circumferential space between the containers with the inside area of the inner container whereby foam produced in the circumferential space by the cooking material when it is boiled passes upwardly in the space and through said elongated openings at a relatively high rate of speed into the inner container to prevent boiling over of the vessel.

4,604,990

COLLECTOR MEANS FOR SOLAR ENERGY COLLECTING SYSTEM

Ronnie D. Nikkel, and Paul M. L'Esperance, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 507,397, Jun. 24, 1983, Pat. No. 4,465,057.
This application Jun. 11, 1984, Ser. No. 619,659
Int. Cl.[4] F24J 2/46
U.S. Cl. 126—418 6 Claims

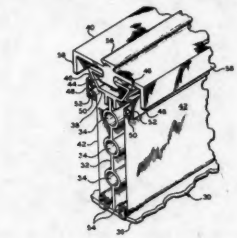
1. Absorber means for a solar energy collector system, which includes an absorber plate means having at least one side thereof exposed to solar rays, comprising:

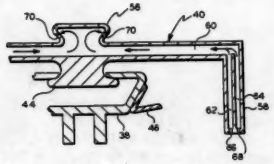
(a) transparent glazing panel means, generally parallel to and in spaced relation to the exposed side of said absorber plate means; and

(b) absorber plate cap means coupled to and extending along one edge of said absorber plate, and having a downwardly depending leg extending over the complimentary edge of said glazing panel means and spaced therefrom;

(c) said cap means having formed therein at least one air channel means generally conforming to the cross-sectional contour of said cap means and having air inlet means adjacent the bottom of said leg of said cap means and in communication with said channel and air outlet

means adjacent the top of said cap means in communication with said channel and said channel being adapted to





permit currents of cooling air to pass therethrough from said inlet means to said outlet means.

4,604,991

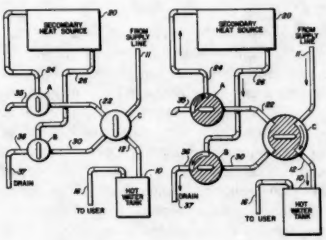
HOT WATER PREHEATER SYSTEM

Kenneth F. Miller, P.O. Box 342, Americus, Ga. 31709

Filed Sep. 6, 1985, Ser. No. 773,251

Int. Cl.[4] F24J *2/04*

U.S. Cl. 126—437 **10 Claims**



1. In a system for supplying hot water to a point of use from a primary heated water storage tank having an inlet and an outlet, an improvement including in combination:

a water supply line;

a secondary water heating source having an inlet and an outlet;

a main valve means having first and second operating positions, and first, second, third, and fourth ports;

second and third valve means each having first and second operating positions and each having first, second and third ports;

means for connecting said water supply line to the first port of said main valve means;

first pipe means connecting the second port of said main valve means to the first port of said second valve means;

second pipe means connecting the second port of said second valve means to the inlet of said secondary water heating source;

drain means;

pipe means connecting the third port of said second valve means and the third port of said third valve means, respectively, to said drain means;

fourth pipe means connecting the outlet of said secondary water heating source to the second port of said third valve means;

fifth pipe means connecting the first port of said third valve means to the third port of said first valve means; and

means coupling the fourth port of said first valve means to the inlet of said primary heated water storage tank; and

wherein the first position of said first valve means interconnects the first and fourth ports thereof for fluid flow therebetween, and the second position of said first valve means interconnects the first and second ports thereof for fluid flow therebetween and connects the third and fourth ports thereof for fluid flow therebetween; the first operating position of said second valve means interconnects the second and third ports thereof for fluid flow therebetween and the second operating position of said second valve means interconnects the first and second ports thereof for fluid flow therebetween; said first position of said third valve means interconnects the second and third ports thereof for fluid flow therebetween and the second position of said third valve means interconnects the first and second ports thereof for fluid flow therebetween.

4,604,992

ENDOSCOPE SYSTEM

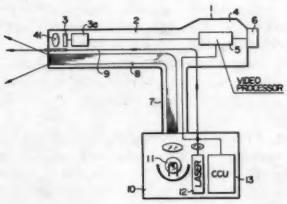
Ken Sato, Akigawa, Japan, assignor to Olympus Optical Company, Ltd., Japan

Filed Dec. 24, 1984, Ser. No. 685,322

Claims priority, application Japan, Dec. 27, 1983, 58-248948

Int. Cl.[4] A61B *1/04*

U.S. Cl. 128—6 **9 Claims**



1. An endoscope system including a line transfer type CCD solid-state camera located within the distal end of an endoscope, said camera providing a video output to a television monitor so that an affected area can be treated with laser radiation while being observed, said system comprising:

a light source for providing illumination;

a laser oscillator for producing said laser radiation;

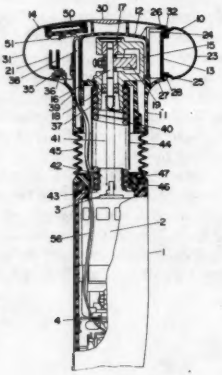
blocking means for blocking said illumination from said light source and said laser radiation from said laser oscillator from impinging upon said CCD camera at least during a period of operation when said CCD camera is in a transfer mode; and

locating means for locating and displaying at least a portion of a path followed by said laser radiation on said television monitor.

4,604,993
VIBRATORY MASSAGE DEVICE

Hiroshi Moriwaki; Yukio Yamamura, both of Hikone, and Kazuhiko Fujikawa, Mie, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Dec. 13, 1983, Ser. No. 560,849
Claims priority, application Japan, Jan. 31, 1983, 58-14149
Int. Cl.[4] A61H *21/00*
U.S. Cl. 128—24.2 1 Claim



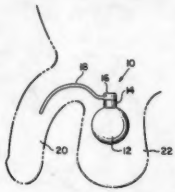
1. A vibratory massage device comprising:
an elongated housing adapted to fit the user's hand and enclosing an electric motor, the housing being outwardly flared at one end to form an applicator head of fungiform shape;
the applicator head having a generally flat to face, a portion thereof being rigid and of good thermal conductivity and a side face which is generally C shaped in cross section;
the C shaped side face having a first portion which is rigid and of good thermal conductivity extending part way circumferentially around the applicator head and a second portion which is resilient and etends around the remainder of the circumference of the applicator head;
a positive temperature coefficient electric heating element within the applicator head and disposed closely adjacent the underside of the rigid portion thereof, and in good thermal conductive contact therewith;
an eccentric weight mounted for rotation within said applicator head about an axis perpendicular to the generally flat top face and means connecting the weight to the motor for rotation thereby;
the rotation of the eccentric weight being such as to cause a rubbing massage when the generally flat end face is contacted by the user and a tapping massage action when either the rigid or resilient side faces are contacted by the user.

4,604,994
IMPLANTABLE MEDICAL PROSTHESIS FOR OBVIATING MALE IMPOTENCY

Andrew I. Sealfon, Port Washington, N.Y., assignor to Repro-Med Systems, Inc., Middletown, N.Y.

Filed Jun. 24, 1985, Ser. No. 747,938
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 8 Claims

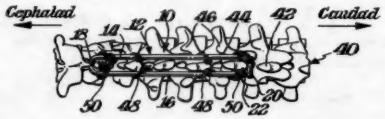
1. An implantable medical prosthesis for the demand delivery of medication comprising a manually compressible reservoir for maintaining a quanity of fluid medication within the body and having an outlet from said reservoir for directing said fluid medication to a selected part of the body, including means for normally storing a predetermined dose of said fluid medication in advance of said outlet in readiness for discharge to the body, said means being responsive to compression of said reservoir to discharge said stored predetermine dose and responsive to the subsequent release of compression to be automatically supplied with an amount of fluid from said reservoir equal to the amount of discharged dose to restore a predetermined dose of fluid medication for succeeding discharge.



4,604,995
SPINAL STABILIZER

David C. Stephens, 129 School Rd., Wilmington, Del. 19803, and Craig D. Morgan, 902 Stuart Rd., Wilmington, Del. 19807

Filed Mar. 30, 1984, Ser. No. 595,259
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—69 9 Claims



1. A surgical implant for imparting stability to the thoracolumbar spine by fixation of the implant to the spine with segmental spinal instrumentation, the implant comprising a unitary rod having a generally rectangular configuration formed by a pair of spaced apart branches substantially mirror image duplicates of one another and substantially equally spaced apart along their entire length, a bight end piece interconnecting the branch pair at one end portion thereof, and a gate forming end piece connected to close the other end portion of the branch pair except for a small gate opening to provide access to the space between the branch pair.

4,604,996
EXTERNAL SKELETAL FIXATOR

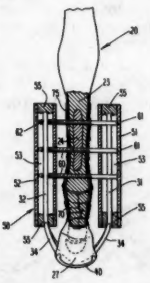
David M. Nunamaker, 396 Valley Rd., West Grove, Pa. 19390, and Dean W. Richardson, 1291 New London Rd., Landenberg, Pa. 19350

Filed Mar. 11, 1985, Ser. No. 710,376
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—87 R 20 Claims

1. An external skeletal fixator for treating an injured mammalian limb which comprises
a plurality of transfixation pins which transfix bone at separated sites along the limb proximal the injury and terminate beyond the limb;
means for rigidly connecting pins terminii to a weight bear-

ing member carried beneath the foot of the limb; together with

means for immobilizing the limb distal the injury;



whereby the weight of the mammal is transferred from the limb proximal the injury to said weight bearing member, permitting the mammal to ambulate while the injury heals.

4,604,997

ARTICULATED MINI EXTERNAL FIXATION DEVICE

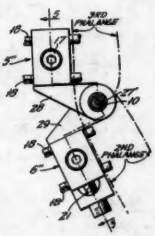
Giovanni De Bastiani, Verona; Lodovico R. Brivio, Castenedola; Roberto Aldegheri, Lupatoto, and Giovanni Faccioli, Monzambano, all of Italy, assignors to Orthofix S.r.l., Verona, Italy

Filed Jan. 23, 1985, Ser. No. 694,062

Claims priority, application Italy, Feb. 13, 1984, 84909 A/84

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—92 A **17 Claims**



1. An articulated external minifixator device, comprising two elongate arms with a single-axis articulating connection of adjacent ends of said arms, said connection being characterized by an alignment guide bore on the axis of articulation, first clamping means including spaced guideways adpated for clamping at least two orthopedic pins which are longitudinally spaced and oriented transverse to the direction of elongation of one of said arms, said first clamping means being at offset from the articulation axis, second clamping means including spaced guideways adapted for clamping at least two orthopedic pins which are longitudinally spaced and oriented transverse to the direction of elongation of the other of said arms, said second clamping means being at offset from the articulation axis, and means including a longitudinal lead screw in one of said arms and egaging the clamping means of said one arm for selective longitudinal positioning adjustment of the clamping means of said one arm.

4,604,998

LASER SURGERY DRAPE

Joseph H. Bellina, 3439 Kabel Dr., New Orleans, La. 70114

Filed Apr. 11, 1984, Ser. No. 598,994

Int. Cl.[4] A61F *13/00*

U.S. Cl. 128—132 D **18 Claims**

1. A laser surgery drape for use in protecting a patient from the radiation of a medical operating laser during surgery comprising:

a. a multi-layered drape that can be draped upon the patient, having at least one metallic layer adhered to at least one non-metallic fabric-like layer; and

b. reflective surface means positioned to reflect laser radiation toward the metallic and non-metallic layers for diffusing any laser radiation ray which is emitted from the medical operating laser and penetrates the metallic and non-metallic layers.

4,604,999

INHALATOR

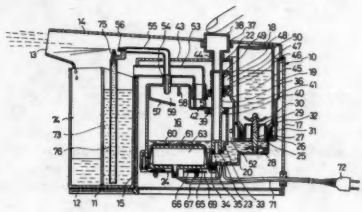
Masatoshi Maeda, Hikoni, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 24, 1984, Ser. No. 603,427

Claims priority, application Japan, May 14, 1983, 58-84372

Int. Cl.[4] A61M *15/00*

U.S. Cl. 128—200.21 **5 Claims**



1. An inhalator comprising:

a casing including

a housing, and

a cover mounted atop said housing and forming a vapor discharge port adjacent a front end of said casing,

a suction tank disposed in said casing at a front end thereof below said discharge port for containing an inhalant,

a suction tube extending into said suction tank and including a suction nozzle at its upper end,

a water supply chamber disposed in said casing for containing a supply of water,

a vaporizing chamber disposed in said casing forwardly of said supply chamber and including a portion disposed below said supply chamber,

said vaporizing chamber including a vapor release vent communicating said vaporizing chamber with a space disposed above said vaporizing chamber, said space communicating with the exterior of said casing,

a water level adjusting chamber disposed in said casing at about the same height as said vaporizing chamber and arranged to fluidly communicate said supply chamber with said vaporizing chamber,

said adjusting chamber communicating with said vaporiz-

ing chamber by means of a communicating path disposed below said vapor release vent,

said adjusting chamber including an air vent path communicating with said space,

valve means for closing said vent and said communicating path simultaneously,

a heater for heating and vaporizing water in said vaporizing chamber in response to the closing of said vent and communicating path by said valve means, and for terminating the heating of the water in response to the opening of said vent and communicating path, and

ejector means communicating with said vaporizing chamber for conducting vapor therefrom and ejecting the vapor toward said vapor discharge port and across said suction nozzle to create a Venturi effect for sucking inhalant from said suction tank and into the stream of vapor.

4,605,000

GREENHOUSE HELMET

Waldemar Anguita, 83 N. Henry St., Apt. 1-L, Brooklyn, N.Y. 11222

Filed Jan. 4, 1985, Ser. No. 688,821
Int. Cl.[4] A62B 7/00
U.S. Cl. 128—201.25 **6 Claims**

1. A greenhouse helmet which comprises:

(a) a transparent dome worn completely over the head of a person;

(b) means for securing said dome to said person;

(c) means for adequately filtering ambient air having carbon dioxide in and out of said dome to meet the needs of the person;

(d) means for resting at least one plant within a pot placed in said dome so that carbon dioxide of said ambient air will mix with carbon dioxide breathed out by said person to be used by said plant to produce oxygen to be breathed in by said person in addition to the ambient air; and

(e) means for securing said plant and pot upon said resting means within said dome.

4,605,001

SURGICAL STAPLING INSTRUMENT WITH DUAL STAPLE HEIGHT MECHANISM

Robert G. Rothfuss, Bellevue, Ky.; David K. Kuhl, Cincinnati, Ohio, and Michael A. Murray, Bellevue, Ky., assignors to Senmed, Inc., Cincinnati, Ohio

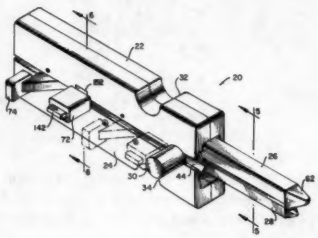
Filed Oct. 19, 1984, Ser. No. 662,621
Int. Cl.[4] A61B 17/11
U.S. Cl. 128—305 **38 Claims**

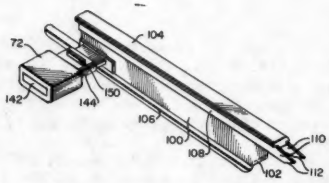
15. A surgical stapling instrument comprising:

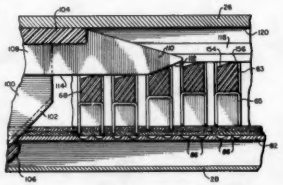
first and second cooperating elongate jaw members, one of said jaw members including a staple cartridge adapted to receive at least two laterally spaced longitudinal rows of staples, and said other jaw member including an anvil adapted to form said staples,

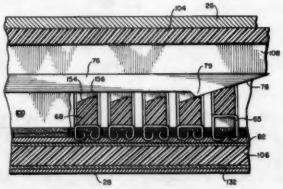
an elongate actuator assembly mounted on one of said jaw members and slidable longitudinally relative to said jaw members, said actuator assembly including cam means for sequentially driving the staples partially from said staple cartridge to force the staples in said longitudinal rows into tissue gripped between said jaw members without forming the staples against said anvil, and knife means for cutting the tissue along a line between said longitudinal staple rows after the unformed staples are forced into the tissue, and

an elongate staple driver mounted on one of said frames and slidable longitudinally relative to said jaw members for completely ejecting the staples from said staple cartridge









and forming the staples against said anvil to provide laterally spaced longitudinal rows of closed staples along opposite sides of the line cut in the tissue.

28. A surgical stapling instrument comprising:

first and second cooperating elongate jaw members, one of said jaw members including a staple cartridge adapted to receive at least two laterally spaced longitudinal rows of staples, and said other jaw member including an anvil adapted to form said staples,

means for sequentially driving the staples from said staple cartridge into tissue gripped between said jaw members

and forming the staples against said anvil means to produce a pair of laterally spaced longitudinal rows of closed staples in the tissue,

knife means for cutting the tissue gripped between said jaw members along a line between said longitudinal staple rows, and

support means including elongated support members movable into engagement with each of said elongate jaw members and adapted to provide support along substantially the entire length of said staple cartridge and said anvil during the forming of the staples.

37. A method of performing an anastomosis using a surgical stapling instrument including first and second cooperating jaw members, one of said jaw members including a staple cartridge adapted to receive a plurality of staples arranged in at least one row, and said other jaw member including an anvil adapted to form said staples, said method comprising:

clamping the tissue to be anastomosed between the staple cartridge and the anvil on the jaw members,

partially ejecting the staples from said staple cartridge into the tissue gripped between the jaw members to force the staples into the tissue before the tissue is cut without forming the staples to produce at least one row of unformed staples in the tissue,

cutting the tissue gripped between the jaw members along a line adjacent to said row of unformed staples, and

completely ejecting the staples from the staple cartridge and forming the staples against the anvil after the tissue is cut to provide at least one row of closed staples adjacent to the line cut in the tissue.

4,605,002

PURSE-STRING INSTRUMENT

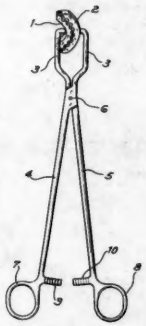
Carlo Rebuffat, Via Galilei 7, Trento, Italy

Filed Mar. 5, 1984, Ser. No. 585,929

Claims priority, application Italy, Mar. 11, 1983, 20033 A/83

Int. Cl.[4] A61B *17/04*

U.S. Cl. 128—321 **1 Claim**



1. A purse-string instrument for the mechanical placement of a distal purse-string comprising two coaxial arc shaped jaws each having a different curvature and each provided with a working surface and an arc shaped channel for the insertion of a proper needle, two hinged arc shaped handles, and two intermediate segments which connect the jaws to the arc shaped handles and each having a longitudinal axis, wherein the angle formed by the projection of the working surface of the jaws and the longitudinal axis of the intermediate segments connecting the jaws and the handles is the complement of the angle formed by the longitudinal axis of the intermediate segments connecting the jaws and the handles and the tangent to the arc handles at the location of attachment between the arc handles and the segments.

4,605,003

LITHOTRIPTOR

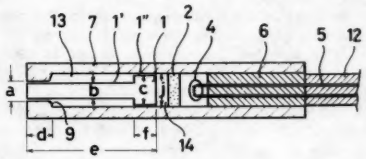
Senzo Oinuma; Kazumi Tanaka; Kazuo Shiino, all of Ibaraki, and Hiroki Watanabe, Otsu, all of Japan, assignors to Agency of Industrial Science & Technology; Kyoto Prefectural Government and Hosoya Fireworks Co., Ltd., of JPX

Filed Nov. 29, 1984, Ser. No. 676,360

Claims priority, application Japan, Jul. 3, 1984, 59-138150

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—328 **14 Claims**



1. A lithotriptor comprising an outer slender tube small in outside diamter enough for insertion into an organ growing a stone therein and open in the leading end thereof, an inner member internally disposed in the front portion of said outer slender tube, means for preventing gases from leaving said outer slender tube, said outer slender tube accommodating therein behind said inner member an explosive layer or a gas-generating layer, ignition means for igniting said explosive layer or said gas-generating layer, and a closing member for preventing rearward advance of the gas generated on explosion of said explosive layer or said gas-generated layer, and said closing member admitting insertion of a power feed line for passing electric current to said ignition means and thereby causing explosion of said explosive layer of gas-generating layer.

4,605,004

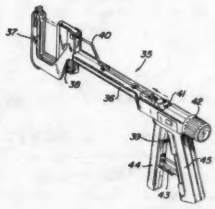
SURGICAL INSTRUMENT FOR APPLYING FASTENERS SAID INSTRUMENT INCLUDING FORCE SUPPORTING MEANS (CASE IV)

John Di Giovanni, Woodbridge, and John Kula, Budd Lake, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,119

Int. Cl.[4] A61B *17/00, 17/12*

U.S. Cl. 128—334 R **5 Claims**



1. A surgical instrument for stitching tissue by means of staples, said instrument comprising a support body, a pair of jaws mounted at one end of said support body, a staple housing mounted in one of said jaws, said jaw containing said staple housing being movable with respect to the other of said jaw means mounted on said support body for moving said jaw containing said staple housing towards the other jaw to close the gap therebetween and clamp tissue therebetween, drive means mounted on said support body for driving the staples from the jaw containing the staple housing towards the opposite jaw, actuating means mounted at the end of said support body opposite said end on which the jaws are mounted for actuating said staple drive means, the improvement comprising

engaging means connecting the support body and movable jaws containing the staple housing when the appropriate gap is set between the jaws to reinforce the central portion of said jaw and transmit forces from the jaw to the support body while the staples are being driven.

4,605,005

WOUND CLOSURE DEVICE AND METHOD FOR USING SAME

Joseph C. M. Sheehan, Burr Ridge, Ill., assignor to Kells Medical, Inc., Burr Ridge, Ill.

Continuation-in-part of Ser. No. 472,053, Feb. 10, 1983, Pat. No. 4,526,173, which is a continuation-in-part of Ser. No. 367,671, Apr. 12, 1982, abandoned. This application Oct. 16, 1984, Ser. No. 661,375

Int. Cl.[4] A61B *17/08*

U.S. Cl. 128—335 **22 Claims**

1. A wound closure device for a wound in a region of skin which defines an epidermal layer and a germinal layer, said device comprising:

a strip defining first and second end sections and a center section;

an adhesive layer covering the first and second end sections and the center section and adapted to adhesively secure each of the sections to the epidermal layer;

said center section defining a selected convex shape and comprising a resilient material which operates to allow the center section to be flattened during application of the strip to the epidermal layer and then to return to a convex shape after the adhesive layer has secured the sections to the epidermal layer, thereby everting the skin under the center section in order to enhance alignment of the germinal layer across the wound.

4,605,006

HYPOTHERMIC PROTECTION PAD

Roberta C. Jacques, West Lakeland Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1984, Ser. No. 584,316

Int. Cl.[4] A61F *7/12*

U.S. Cl. 128—401 **7 Claims**

1. A hypothermic protection pad for topically cooling an internal organ comprising:

A. a flexible, outer pouch, comprised of a polymeric film and having two major, opposite sidewalls;

B. a flexible liquid-tight bladder having two major, opposite sidewalls, said bladder being disposed within said pouch between said sidewalls of said pouch;

C. a sterile solution of sodium chloride in water, containing 0.85–0.95 weight percent of sodium chloride, capable of absorbing and dissipating heat and contained within said bladder; and

D. a thermal insulating layer comprising a web of microfibers, said layer being disposed within said pouch between one sidewall of said pouch and one sidewall of said bladder so that said hypothermic protection pad can be positioned between said internal organ and a surface with said insulation layer between said bladder and said surface to restrict heat transfer from said surface into said liquid while permitting heat transfer from said organ into said liquid.

4,605,007

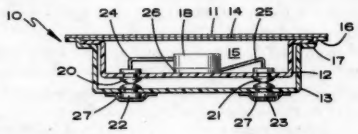
TEMPORARY PACKAGE FOR AN ELECTRICAL COMPONENT

Neil H. Heraly, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 2, 1980, Ser. No. 155,432

Int. Cl.[4] A61N *1/00*

U.S. Cl. 128—419 PT **11 Claims**



1. In a temporary package for a body implantable signal generator of the type having a container housing a signal generator, the container including tray means and gas permeable closure means maintaining a sterile internal condition while closed, the improvement which comprises means for monitoring the operating parameters of said container housed signal generator at the tray means exterior without compromising internal container sterility including electrically conductive path means extending through said tray means to at least two electrical contact means at said tray means exterior and insulating means removably secured to said tray means exterior over said contact means.

4,605,008

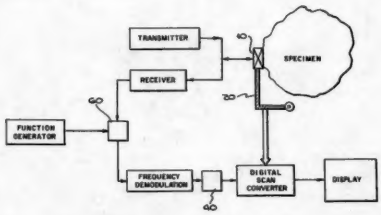
ACOUSTICAL IMAGING SYSTEM

Leonard A. Ferrari, San Clemente, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 1, 1984, Ser. No. 667,380

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **11 Claims**



1. In a method for generating frequency demodulated acoustic images of a body organ, said method including the steps of generating an electrical signal at a defined frequency, projecting said signal against said organ, receiving the acoustic pressure signals reflected from said organ, frequency demodulating said reflected signals to produce the scattering properties of said organ, and displaying images of said demodulated signal, the improvement comprising:

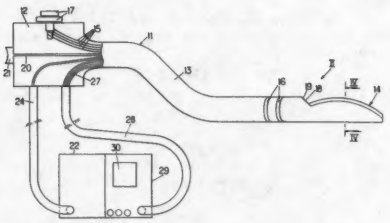
generating a fixed frequency signal; and

adding said fixed frequency signal to said reflected acoustic pressure signals prior to said frequency demodulation such that low-level signals or noise in said reflected acoustic pressure signals is suppressed, whereby said images are enhanced.

4,605,009
ULTRASONIC SWEEP ECHOGRAPHY AND DISPLAY ENDOSCOPIC PROBE

Léandre Pourcelot, Saint Avertin; Gérard Fleury, Fondettes Par Luynes, and Marceau Berson, Joue les Tours, all of France, assignors to Universite Francois Rabelais, Tours, France

Filed Apr. 5, 1984, Ser. No. 597,054
Claims priority, application France, Apr. 6, 1983, 83 05610
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **8 Claims**



1. An endoscopic probe system for simultaneous visual and ultrasonic imaging of internal body parts, comprising

an endoscope insertable into a body organ and including an elongated flexible tubular member having an axis, a rigid end section having a lateral wall and connected to a distal end of said tubular member, and mechanical control means to said tubular member for adjusting the angular position of said end section with respect to said axis,

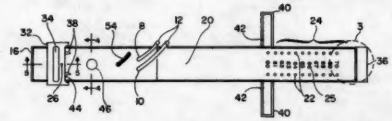
an optical system for use in visually viewing said body organ in a predetermined field of view including lens means secured to said lateral wall of said end section, optical light carrying and image return means located within and along said flexible tubular member from said distal end to a proximal end thereof, and viewing means located outside of said flexible tubular member and connected to said optical means at said proximal end,

and a ultrasonic imaging system for use in providing a display of said body organ in an angular field having an overlap with said predetermined field of view, said ultrasonic imaging system having a curved linear array of piezoelectric transducer elements fixed to said lateral wall of said end section, the convexity of said array being directed outwardly of said end section, electronic circuit means operatively associated with said transducer elements and arranged for operating said piezoelectric elements according to a predetermined sector scanning sequence for sweeping said angular field with a focussed ultrasonic beam and display means connected to said electronic means and providing a visual image of said body organ.

4,605,010
PRESSURIZING CUFF

James A. McEwen, Richmond, Canada, assignor to Western Clinical Engineering Ltd., Richmond, Canada

Filed May 17, 1984, Ser. No. 611,083
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—686 **18 Claims**



1. A cuff for encircling a human limb, comprising in combination:

(a) an inflatable bladder capable of completely encircling the limb;

(b) a stiffener which causes the bladder when encircling the limb to inflate inwardly;

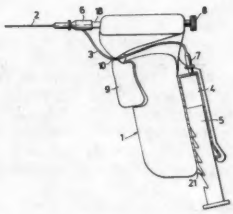
(c) bladder-securing means for securing the bladder around the limb; and

(d) stiffener-securing means for securing the stiffener around the limb independently of the bladder-securing means such that the bladder remains encircling the limb if either the bladder-securing means of the stiffener-securing means becomes ineffective.

4,605,011
CELL SAMPLING APPARATUS

Jan I. Näslund, Vassvägen 21, S-141 39 Huddinge, Sweden

Filed Mar. 13, 1984, Ser. No. 588,954
Claims priority, application Sweden, Mar. 23, 1983, 8301598
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—752 **11 Claims**



1. Apparatus for taking samples of cells from small tumours by means of fine-needle puncture techniques, said apparatus comprising a hand-grip having a trigger for operating the apparatus by activating the trigger, said hand-grip having detachably connected thereto a syringe provided with a cannula connected via a coupling to a motor energized on activation of said trigger to drive the cannula in an oscillating reciprocatory movement, said cannula being connected to a container forming part of the apparatus, said container having means operative to create in the cannula a vacuum for drawing a cell sample into said cannula on activating the trigger, and means operatively associated with the trigger to prevent the vacuum from reaching the cannula when the trigger is released, said last-named means being also effective to deenergize the motor on termination of vacuum.

4,605,012
APPLICATOR FOR SUPPLYING RADIO-FREQUENCY ENERGY TO AND FROM AN OBJECT

Victor Ringeisen, Wissembourg; Maurice Chivé, and Serge Toutain, both of Lille, all of France, assignors to Odam, Societé Anonyme, Wissembourg, France

Filed Jan. 9, 1984, Ser. No. 569,400
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300677
Int. Cl.[4] A61N *5/02*
U.S. Cl. 128—804 **9 Claims**

1. An applicator for coupling electromagnetic energy into a high-loss material, such as tissue, comprising in combination

a transmission line having first and second conductors (3,4) disposed in different respective planes,

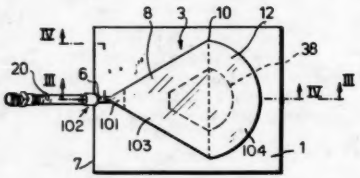
a substrate (1) of insulating material interposed between said conductors (3,4), said substrate (1) being in firm mechanical relationship with said conductors (3,4),

said conductors (3,4,) having an at least approximately complementary configuration,

so that said first conductor (3), which is disposed in one plane, increases in width from a substantially pointed end region (101) near a connection zone (102) adapted to be

connected to a radio frequency supply line carrying frequencies at least within the range of about 434 MHZ to about 2.45 GHz, to a truncated wedge-like broader region (103) widening as its extends away from said connection zone (102), said truncated wedge-like broader region (103) merging smoothly with said pointed end region (101),

while said second conductor (4), which is disposed substantially in the other plane, defines on a portion thereof a delimiting face (25) facing outwardly, which is adapted to be in substantially flat relationship with said high-loss



material, said second conductor being further formed with a recess (14) extending substantially only opposite said broader region (103) of said first conductor (3), and having opposite said broader region (103) substantially the shape of said first conductor (3),

at least one of the remaining portion of said second conductor (4) and said first conductor (3) extending substantially in parallel with said delimiting face (25) and in proximity thereto,

whereby said transmission line may radiate electromagnetic energy within a bandwidth of at least 2 GHz.

4,605,013

METHOD AND APPARATUS FOR FORMING DISCRETE BATCHES OF TOBACCO PARTICLES

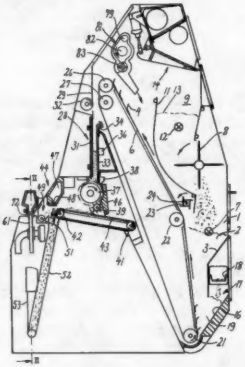
Manfred Goldbach, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 575,169

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1983, 3303381

Int. Cl.[4] A24C *5/14*

U.S. Cl. 131—80 **20 Claims**



1. A method of forming discrete batches of tobacco particles at the periphery of a rotating conveyor, comprising the steps of converting the particles into a first stream and forcibly advancing the stream along a first portion of a predetermined path; converting the first stream into a narrower second stream and forcibly advancing the second stream along a second portion of said path; and conveying successive increments of the second stream toward the periphery and substantially radially of the conveyor.

4,605,014

MACHINE FOR THE PRODUCTION OF SMOKERS' PRODUCTS WITH CAVITIES BETWEEN THEIR ROD-SHAPED COMPONENTS

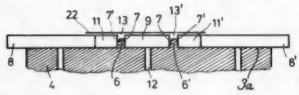
Günter Wahle, Reinbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,584

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239763

Int. Cl.[4] A24C *5/52*

U.S. Cl. 131—94 **11 Claims**



1. In a machine for manipulating rod-shaped articles of the tobacco processing industry, particularly for making filter cigarettes with cavities between the rod-shaped components thereof, the combination of a conveyor having elongated article-receiving flutes and at least one distancing element in each of said flutes, each of said distancing elements having a predetermined thickness, as considered in the longitudinal direction of the respective flute; and means for feeding discrete rod-shaped articles into said flutes at the opposite sides of the respective distancing elements so that the discrete articles at the opposite sides of the distancing elements are separated from one another by gaps having a width at least matching the thickness of the respective distancing elements.

4,605,015

METHOD OF TIP TURNING FILTER CIGARETTES OR THE LIKE

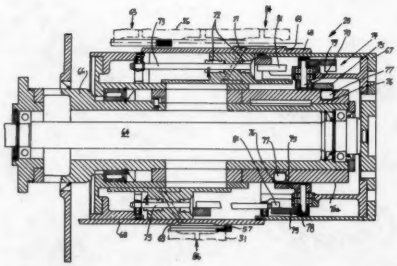
Karl-Heinz Grieben, Schwarzenbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 362,409, Mar. 26, 1982. This application Apr. 25, 1985, Ser. No. 727,365

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114331

Int. Cl.[4] A24C *5/52*

U.S. Cl. 131—94 **11 Claims**



1. A method of inverting filter cigarettes or analogous rod-shaped articles each of which has a filter at one end thereof, comprising the steps of transporting two parallel rows of arti-

cles sideways so that the filters of articles in one of said rows are adjacent to the filters of articles in the other of said rows; turning the articles of said one row through at least substantially 180 degrees about axes which are at least substantially normal to the longitudinal directions of such articles and remote from the respective filters so that the filters of the thus inverted articles face away from the articles of said other row, said turning step including conveying the articles of said one row along an endless path, turning successive articles through a first angle during transport along a first portion of said path, providing a first mobile support for successive articles of said one row during turning through said first angle, turning successive articles through a second angle during transport along a second portion of said path, and providing a second mobile support for successive articles during turning through said second angle, the sum of said first and second angles being or approximating 180 degrees; and shuffling said rows to form a single third row of articles wherein the orientation of all filters is the same.

4,605,016

PROCESS FOR PREPARING TOBACCO FLAVORING FORMULATIONS

Kiyomi Soga, Ayase; Nobuyoshi Tenjin; Hiroyuki Tohira, both of Odawara; Naoyoshi Ninomiya, Hiratsuka, and Yasuhiro Nishikata, Fujisawa, all of Japan, assignors to Japan Tobacco, Inc., Japan

Filed Jul. 20, 1984, Ser. No. 632,874
Claims priority, application Japan, Jul. 21, 1983, 58-131973
Int. Cl.[4] A24B *3/18, 15/18*
U.S. Cl. 131—297 **4 Claims**

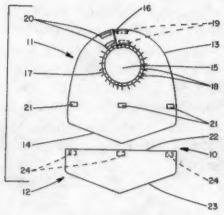
1. A process for preparing a tobacco flavoring formulation extract which comprises extracting tobacco leaves having a moisture content of 7.9 to 12.7% by weight with cold water at a temperature of 0°–10° C. in a quantity of one to five times by weight of water to obtain a liquid extract by solid-liquid separation and concentrating the extract at a concentration temperature of 30°–50° C. to produce a solute concentration of 25–35% by weight and recover a concentrated extract.

4,605,017

PERMANENT WAVE CAPE

Patricia A. Thompson, Mabry Rd., and Dot M. Wood, Barkersville Rd., both of Angier, N.C. 27501

Filed Mar. 26, 1984, Ser. No. 593,544
Int. Cl.[4] A45D *44/00*
U.S. Cl. 132—1 R **8 Claims**



1. A permanent wave cape comprising: a border portion having an opening therein for encircling the head of a user thereof; non metallic means for releasably securing said border portion in encircled position around said head; a combination liquid channeling and heat retaining tail portion outwardly extending from said border portion; and a pouch means releasably attachable to said tail portion by non metallic securing means whereby a combination permanent wave cape is provided which confines liquids being used to the scalp area of the head of the user, allows liquids to be channeled in desired predetermined directions, acts as a heat bag and as a receptacle for liquids being recycled and for used curlers.

4,605,018

METHOD OF TREATING HAIR AND ANHYDROUS COMPOSITION RELATED THERETO

Mario de la Guardia, and Charles R. Hendrix, Jr., both of Savannah, Ga., assignors to Carson Products Company, Savannah, Ga.

Continuation-in-part of Ser. No. 236,118, Feb. 19, 1981, abandoned. This application Jul. 27, 1983, Ser. No. 517,709
Int. Cl.[4] A45D *7/00*
U.S. Cl. 132—7 **4 Claims**

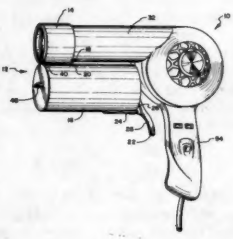
1. An improvement in a composition for treating hair of the type comprising a water-soluble inorganic hydroxide ingredient and a water-soluble guanidine salt ingredient, said ingredients being selected such that reaction products thereof are guanidine hydroxide and a substantially water-insoluble inorganic salt formed by the cation of said inorganic hydroxide ingredient and the anion of said guanidine salt ingredient whereby the reaction producing said guanidine hydroxide will be driven toward completion, the improvement comprising: said hydroxide ingredient and said guanidine salt being incorporated within an effective amount of an anhydrous component which, upon the addition of an effective amount of water to said component, allows said ingredients, upon mixing, to react within said component so as to form guanidine hydroxide which has a pH of at least 11.8 and which is then applied to the hair, said component being an emulsifier.

4,605,019

SPRAYER ATTACHMENT FOR A HAIR DRYER

Gordon S. Reynolds, Bountiful, and Sherman L. Kendall, Salt Lake City, both of Utah, assignors to Sorenco, Inc., Salt Lake City, Utah

Filed Sep. 5, 1984, Ser. No. 647,717
Int. Cl.[4] A45D *1/00*
U.S. Cl. 132—9 **27 Claims**



1. An apparatus which is capable of being attached to a hair dryer, the hair dryer having a nozzle which conveys a stream of air which leaves the hair dryer through the nozzle, which apparatus is also capable of spraying a hair conditioner, comprising:

means for holding a container of hair treatment, said container having means for spraying hair treatment;

means for causing the container to spray hair treatment at desired intervals;

means for directing the spray of hair treatment in a predetermined direction such that the spray is mixed with the stream of air leaving the nozzle of the hair dryer at a point downstream from the end of the nozzle of the hair dryer and such that the air stream and the spray of hair treatment combine to form a single stream;

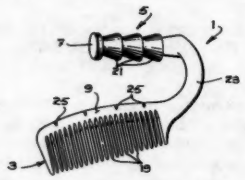
means for removably attaching the apparatus to a hair dryer.

4,605,020

COMB

Michel Lavoie, 1875 Boulevard des Laurentides, Vimont, Laval, Canada (H7M 2P8)

Filed Mar. 27, 1985, Ser. No. 716,630
Claims priority, application Canada, Feb. 19, 1985, 474663
Int. Cl.[4] A45D *24/00*
U.S. Cl. 132—11 R 5 Claims



1. A comb for use by a hairdresser during hair cutting, said comb comprising:

(a) a combing portion comprising a base and a plurality of combing teeth projecting therefrom; and

(b) a handle portion solid with said combing portion, said handle portion comprising:

an arcuate connection part projecting from one end of the base of the combing portion tangentially therefrom and bending back toward said combing portion at a predetermined distance therefrom; and

a gripping part integrally extending from the arcuate connection part in a direction generally parallel to the base of the combing portion, said gripping part standing above said base with respect to the combing teeth and having a predetermined length suitable to be finger-gripped against the palm of a hand of the hairdresser with the said combing portion located generally above the back of the hand, said gripping part being formed with knuckles that are spaced therealong and define finger-lodging grooves to prevent longitudinal displacement of the comb in use;

(c) wherein said predetermined distance at which the arcuate connection part is bent back toward the combing portion, is sufficient to allow easy insertion of the fingers between the gripping part of the handle portion and the base of the combing portion; and

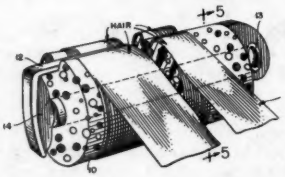
(d) wherein the combing portion is flat along the major portion of its length but twists slightly out of its plane close to the one end of its base from which projects the arcuate connecting part to give additional room to the fingers of the hairdresser.

4,605,021

SELF-TENSIONING HAIR WAVING ROD

Homer J. Hodson, Homewood; Glenn A. Shurney, Chicago, and Eric E. Hartman, Lisle, all of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Aug. 13, 1984, Ser. No. 640,463
Int. Cl.[4] A45D *2/12*
U.S. Cl. 132—33 R 6 Claims



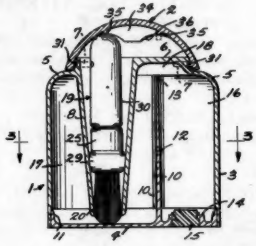
1. A self-tensioning hair waving rod adapted for home permanent use, comprising an elongated generally cylindrical water-absorbing sponge body in substantially dry condition for receiving a strand of hair wrapped therearound, support means extending axially through said sponge body, and retainer means associated with the outer end portions of said support means for holding the wrapped hair strand around the sponge body, said sponge body being formed of a hydrophilic polymer which expands from dry condition on application of water to increase its volume by 50 to 250%, whereby the wrapped strand is tightened and drawn into close proximity to the outer surface of said sponge body.

4,605,022

MAKE-UP POWDER COMPACT AND ITS APPLICATOR BRUSH

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 5, 1984, Ser. No. 597,111
Claims priority, application France, Apr. 26, 1983, 83 06842
Int. Cl.[4] A45D *33/00*
U.S. Cl. 132—82 R 14 Claims



1. A make-up powder compact to contain powder in a substantially fluid state, comprising: a take-up compartment for a dose of powder, an internal duct in said take-up compartment and having a cross-section which decreases progressively towards the bottom of the said take-up compartment and has its smaller cross-section end slightly spaced from the bottom of the take-up compartment; a powder applicator brush which comprises a handle and a tuft of hairs having, in the absence of any constraint, a substantially frustoconical shape with its maximum cross-section greater than the cross-section of the smaller cross-section end of the duct, the tuft being fixed at its smaller cross section end to the end of the brush handle, said brush being detachably fixable in the duct so that when it is accommodated in the duct, the larger cross section free end of the tuft is substantially in contact with the bottom of the take-up compartment and the end of the brush handle remote from the tuft projects from the greater cross-section end of the duct, wherein the brush comprises a collar mounted around the said end of the brush handle and is movable between a first position in which the collar exerts substantially no constraint on the tuft and a second position in which the collar produces a transverse constriction of the tuft.

4,605,023

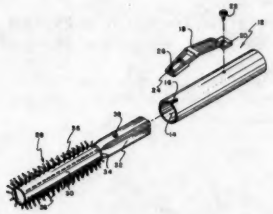
HAIRSTYLING BRUSH AND A METHOD FOR HANDLING HAIRSTYLING BRUSHES

Jimmie D. Modin, 728 S. 10th, Salina, Kans. 67401

Filed Sep. 10, 1984, Ser. No. 648,474
Int. Cl.[4] A45D *44/18*
U.S. Cl. 132—85 6 Claims

1. A hairstyling brush comprising a generally cylindrical hollow handle means having a structure defining a generally cylindircal reservoir and a slot with an open end, a biasing latch means including a first end secured to the handle means and a second end having a structure defining an aperture

which generally registers with the slot, said slot allows the inside of said hollow handle means to communicate with the atmosphere while being situated on the same general side of said handle means where said first end of said latch means connects to said handle means; a brush means having a structure defining a closed shank and an open shank; a plurality of



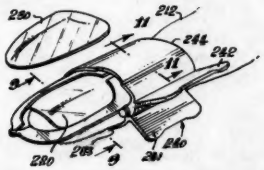
groups of bristles attached to said closed shank; a boss means stationarily integrally bound to said open shank; and said open shank slidably, removably lodged within said generally cylindrical reservoir such that said boss means extends and operates through said slot while simultaneously being received within said aperture of said biasing latch means.

4,605,024

METHOD AND APPARATUS FOR APPLICATION OF ARTIFICIAL FINGERNAILS

Gregory D. Tremblay, 437 1/2 Ninth St. #C, Sparks, Nev. 89431

Filed Sep. 20, 1983, Ser. No. 534,098
Int. Cl.[4] A45D *40/30*
U.S. Cl. 132—88.5 **3 Claims**



1. Apparatus for improved application of artificial fingernails comprising, in cooperative combination: protective shield means comprising a multiplicity of protective elements movably connected together in such manner as to be able to adjust to the configuration of the cuticle area of a fingernail suitable to be removably fastened to a finger in such manner as to encompass the cuticle area around a fingernail so as to prevent damage to the cuticle and flesh adjacent to the fingernail when an artificial fingernail is placed thereon and shaped by abrasion or the like and wherein at least one of the movable elements is suitable to support the end of an artificial fingernail at a distance from the end of the finger.

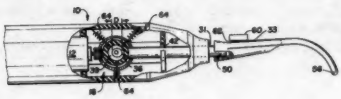
4,605,025

POWERED DENTAL FLOSSING DEVICE

John T. McSpadden, 2112 N. Roan St., Johnson City, Tenn. 37601

Filed May 14, 1984, Ser. No. 610,041
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—92 R **10 Claims**

1. A powered dental flossing device comprising a power element having an electrical motor with an output shaft having drive means thereon, an oscillation unit having driven means engaging said drive means for actuation thereby, a floss stringer connected to said oscillation unit, said oscillation unit further having cam means connected to said driven means, cam follower means on said stringer and engageable with said cam means for actuation thereby, and said follower means being



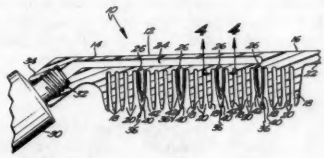
formed to provide a clutch mechanism for imparting oscillatory motion to said stringer essentially only when substantial force is exerted against the floss held thereby.

4,605,026

COMB FOR DISPENSING TREATMENT SOLUTION TO HAIR

Rosemary D. Nolin, 9935 Marigold La., Duluth, Minn. 55810

Filed Apr. 6, 1983, Ser. No. 482,668
Int. Cl.[4] A45D *24/22*
U.S. Cl. 132—112 **17 Claims**



3. Comb for dispensing treatment solution to hair comprising, in combination: an elongated frame member having a first end and a second end; groups of a plurality of teeth extending generally perpendicular to the longitudinal axis of the frame member, with the teeth having a length, a width, and a height, with the groups of teeth being spaced from each creating gaps therebetween; a handle portion extending from the first end of the frame member; means formed in the gaps between the groups of teeth for separating and capturing strands of hair desired to be treated, for receiving and forming pools of hair treatment solution, and for allowing hair to be pulled through the pools of hair treatment solution comprising troughs formed in the frame member; and means for introducing treatment solution into the troughs for application to the hair separated and captured in the gaps between the groups of teeth while leaving the hair located in the groups of teeth and not within the gaps free of the application of treatment solution.

4,605,027

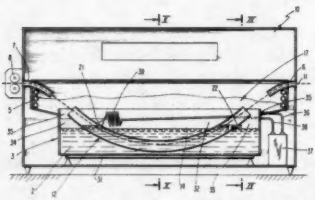
APPARATUS FOR CLEANING A LINEAR OBJECT IN A SOLVENT MEDIUM

Mario Dallot, Annemasse, France, assignor to Ultrasons Annemasse, Annemasse, France

Filed Apr. 2, 1984, Ser. No. 595,824
Claims priority, application France, Apr. 1, 1983, 83 05649
Int. Cl.[4] B08B *3/12*
U.S. Cl. 134—108 **7 Claims**

1. An apparatus for cleaning a continuous, long, linear object in a solvent medium, comprising a tubular guide open at its ends for guiding the long, linear object, means for drawing the object inside said tubular guide along an imposed trajectory in the form of a continuous curve, said tubular guide being provided, adjacent one end thereof, with inlet means for clean solvent medium and, adjacent its other end, with outlet means for dirty solvent medium, so that the solvent medium circulates through the tubular guide in contact with the long, linear object and in the opposite direction to the direction of movement of the object through the tubular guide, and means for subjecting the solvent medium to ultrasound, further compris-

ing a vat including a cleaning compartment and a distillation compartment, each containing solvent medium and laterally separated from each other by a dividing partition having an overflow sill and an opening for providing vapors of the solvent medium with access to said cleaning compartment, with said distillation compartment including heating means and said cleaning compartment projecting upward above the upper



portion of said distillation compartment and having at each end thereof condenser coils for condensing vapors of the solvent medium, with inlet and outlet ramps for said object placed upon said condenser coils, wherein said tubular guide is partly immersed in the solvent medium in said cleaning compartment such that its ends are located above the surface of said solvent medium and under said condenser coils.

4,605,028

TUBE CLEANING APPARATUS

Richard R. Paseman, 5517 Newport, Houston, Tex. 77023

Filed Aug. 20, 1984, Ser. No. 642,262
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—167 C **8 Claims**

1. An apparatus for cleaning tubes, pipes or like elongate tubular objects with pressurized fluid from a controlled pressurized fluid reservoir, comprising:

(a) an essentially tubular lance housing having a front end and a rear end, said housing further comprising:

(1) a fluid inlet adjacent said front end;

(2) a fluid outlet adjacent said rear end;

(3) an essentially cylindrical central bore extending between said front end and said rear end;

(b) elongate lance means mounted for reciprocating motion within said central bore in said lance housing and adapted for dispensing pressurized cleaning fluid, said lance means comprising:

(1) an essentially tubular lance body having a first end, a second end, and a central longitudinal bore extending therebetween;

(2) nozzle means for controlling the volume and direction of fluid discharge from said lance means, said nozzle means being mounted adjacent said first end of said lance body in fluid communication with said lance bore;

(3) generally cylindrical piston means of outer dimension slightly less than the inner dimension of said housing bore, said piston means having a front surface, a rear surface, an essentially cylindrical outer surface and a central longitudinal bore extending the length thereof to enable fluid communication through said piston means to said lance bore, said piston means being mounted adjacent said second end of said lance body and adapted to cause reciprocating motion of said lance means in response to fluid pressure differentials acting alternatively upon said front surface and said rear surface; and

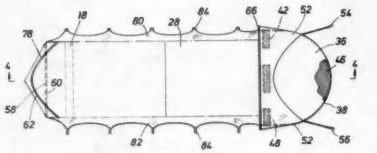
(c) said rear surface of said piston means having a plurality of radial grooves formed thereon for providing fluid communication between said housing central bore and said rear surface of said piston.

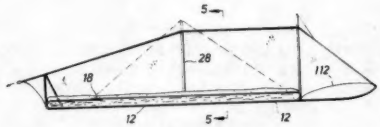
4,605,029

SELF SUPPORTING OUTDOOR SLEEPING SYSTEM

Chesley G. Russell, 11003 Meadow Rue, The Woodlands, Tex. 77380

Filed Mar. 6, 1984, Ser. No. 586,746
Int. Cl.[4] E04H *15/40, 15/44;* **E47C** *29/00;* **A41B** *00/00*
U.S. Cl. 135—104 **24 Claims**





1. A self supporting portable sleeping system, comprising:

(a) ground cover sheet means forming a moisture impervious floor;

(b) a tent cover attached to the peripheral edges of said ground cover sheet means, at least one side of said tent cover being releasable from said ground cover sheet means to facilitate ingress and egress of the user, said tent cover defining rib receptacle means at side portions thereof; and

(c) a plurality of spaced flexible ribs having end portions thereof releasably received within said rib receptacle means, said spaced flexible ribs supporting said tent cover in spaced relation with said floor and tensioning said tent cover, at least one end of at least an intermediate one of said ribs being received in releasable connection with said tent cover at said releasable side thereof, upon release of said one side of said tent cover from said ground cover sheet said at least one of said ribs unflexing and acting with the tension of said tent cover supporting the intermediate portion of said tent cover in elevated position above said ground cover sheet means forming an opening with said ground cover sheet means, said ground cover sheet means being protected from rain by said elevated intermediate portion of said ten cover for said ingress and egress of the user.

4,605,030

PORTABLE ERECTILE VEHICLE SHELTER STRUCTURE

Jefrey K. Johnson, 250 Hampton Ct., Covina, Calif. 91723

Filed Jan. 24, 1985, Ser. No. 694,525
Int. Cl.[4] E04H *15/58, 15/08, 15/48;* **A47B** *39/00*
U.S. Cl. 135—117 **16 Claims**

1. A collapsible structure for sheltering a vehicle having at least four wheels including:

a first pad member having:

a first pad adapted for placement on the ground with a

first wheel of the vehicle to be sheltered parked thereon; and

first hinge means housing connected to said pad; a second pad member having:

a second pad adapted for placement on the ground with a second wheel of the vehicle to be sheltered parked thereon; and

second hinge means housing connected to said pad;

a third pad member having:

a third pad adapted for placement on the ground with a third wheel of the vehicle to be sheltered parked thereon; and

third hinge means housing connected to said pad; a fourth pad member having:

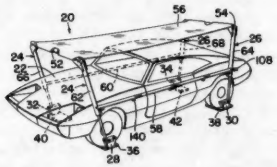
a fourth pad adapted for placement on the ground with a fourth wheel of the vehicle to be sheltered parked thereon; and

fourth hinge means housing connected to said pad; a first collapsible hoop having:

a first side with a first end pivoting in said first hinge means housing;

a second side with a second end pivoting in said second hinge means housing; and

a center portion connecting said first and second sides thereof;



a second collapsible hoop having:

a first side with a third end pivoting in said third hinge means housing;

a second side with a fourth end pivoting in said fourth hinge means housing; and

a center portion connecting said first and second sides thereof;

first collapsible linkage connected to said first side portions of said first and second collapsible hoops;

second collapsible linkage connected to said second side portions of said first and second collapsible hoops; and

a canopy connected between said center portions of said first and second collapsible hoops, said first end including:

a sidewardly facing pin extending therefrom, and said first hinge means housing includes:

first and second side plates spaced for insertion of said first hoop end therebetween, said first side plate including:

a generally horizontal cutout therein;

an upper surface; and

a generally vertical slot through said upper surface to said generally horizontal cutout whereby said sidewardly facing pin can be slid through said generally vertical slot and positioned in said generally horizontal cutout for pivoting therein.

4,605,031

METHOD OF AND DEVICE FOR REPAIRING SLIDE-VALVE SPINDLES

Klaus J. Gründ, Winkelweg 5, 8071 Unterhaunstadt, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,196

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320505

Int. Cl.⁴ F16K *43/00*

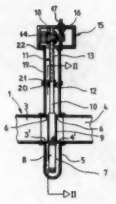
U.S. Cl. 137—15 **14 Claims**

1. A method of repairing a spindle rising within a tubular attachment of a valve housing from a slider which is vertically reciprocable between two limiting positions within said housing for selectively blo king and unblocking a flow of fluid between two pipe sections adjoining said housing, said spindle having a damaged upper part,

comprising the steps of:

(a) removing said attachment to expose a portion of said spindle including said damaged upper part;

(b) severing said upper part from said spindle with a spindle stump remaining fixed to said slider;



(c) providing a replacement spindle part of greater length than said upper part and attaching said replacement part to said spindle stump;

(d) reconnecting said attachment and said housing; and

(e) supplementing said attachment with an extension equaling at least the length difference between said upper part and said replacement part.

4,605,032

AIR VENT DEVICE FOR FUEL TANK ON VEHICLE

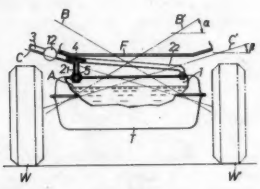
Mitsutoshi Hayashi, Wako; Kazunobu Nagaoka, Asaka, and Michihiro Ohkawa, Shiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,599

Claims priority, application Japan, Jun. 22, 1983, 58-112468

Int. Cl.⁴ F16K *24/00*

U.S. Cl. 137—44 **6 Claims**

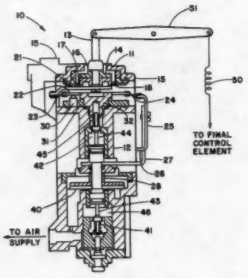


1. An air vent device for a fuel tank on a vehicle, having paired first and second air vent pipes joined to the portions of an upper section of a fuel tank which are spaced from each other in the lateral direction of said vehicle, and a main air vent pipe connected to said paired air vent pipes to communicate those paired pipes with the atmospheric air, wherein a connecting point of said three air vent pipes is positioned below at least one of left and right maximum-angled inclined surfaces of fuel contained in the fuel tank, which surfaces are inclined with respect to the lateral axis of said fuel tank, and wherein said maximum-angled inclined surfaces are obtainable when said vehicle turns to the left and right, and a normally-opened float valve adapted to be closed when the fuel reaches said float valve, said float valve being provided in said first or second air vent pipe, and wherein a portion of said valve opening into the tank is positioned to be submerged in the fuel when the fuel surface is inclined to be said one maximum-angled inclined surface.

4,605,033
PNEUMATIC CONVERTER HAVING VARIABLE GAIN RELAY STACK

Lee A. Weber, Mentor, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 27, 1984, Ser. No. 655,172
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—84 3 Claims

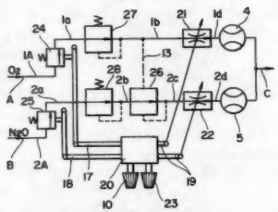


1. In a pneumatic positioner of the type having a nozzle connected to a source of air under pressure, a flat vane juxtaposed adjacent to the outlet of the nozzle, and input means operatively connected to a first end of the vane for pivotally moving the vane relative to the outlet to variably restrict the outflow of air from the outlet and vary the back-pressure of the nozzle, and means operatively connected to a second end of the vane for generating an output signal, said nozzle being juxtaposed to a portion of the vane intermediate said first and second ends, the improvement wherein the vane comprises an O-shaped strip having an O-shaped recess, an elongated stem extending into the O-shaped recess between the first and second ends of the strip, a disc mounted on the stem for rotation, the nozzle being mounted in the disc for movement therewith with the outlet of the nozzle continuously aligned with the vane along a path between the first and second ends for the entire range of disc and nozzle movement, and a first flexible membrane connected to the first end of the vane at one end and to a link member at the other end, the link member being a strip vertically spaced from and substantially parallel to the O-shaped strip and being connected to the input means.

4,605,034
GAS FLOW CONTROL SYSTEM FOR AN ANESTHESIA APPARATUS

Yoshihisa Urushida, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 664,050
Claims priority, application Japan, Oct. 25, 1983, 58-199442
Int. Cl.[4] A61M *16/01*
U.S. Cl. 137—88 3 Claims



1. A gas flow control system for an anesthesia apparatus, comprising:

an oxygen circuit between an oxygen gas inlet and a manifold;

a gaseous anesthetic circuit between an anesthetic gas inlet and said manifold;

an oxygen valve connected to said oxygen gas inlet for controlling the supply of oxygen gas;

an anesthetic valve connected to said anesthetic gas inlet for controlling the supply of anesthetic gas;

an oxygen gas pressure reducing valve provided in said oxygen circuit for reducing primary pressure of said oxygen gas supplied from said oxygen valve to secondary pressure;

an oxygen gas flow regulating valve connected between a secondary side of said oxygen gas pressure reducing valve and said manifold for regulating the flow rate of said oxygen gas;

an anesthetic gas pressure reducing valve provided in said gaseous anesthetic circuit for reducing primary pressure of the anesthetic gas to secondary pressure;

a pressure control valve connected to the secondary side of said anesthetic gas pressure reducing valve and responsive to said secondary pressure of the oxygen gas for controlling said secondary pressure of said anesthetic gas;

an anesthetic flow regulating valve connected between a secondary side of said pressure control valve and said manifold for regulating the flow rate of said anesthetic gas; and

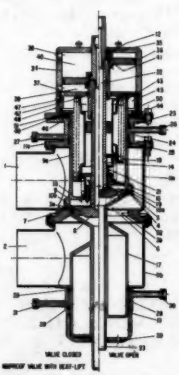
means for operating said oxygen gas flow regulating valve and said anesthetic gas flow regulating valve and for controlling flow rates of both gases;

said means having a knob for operating said oxygen valve, said knob having a cut off position, and said means being so arranged that when said knob is at the cut off position, both the oxygen valve and anesthetic valve are closed, when said knob is operated a predetermined small degree, said oxygen valve is opened, and when said knob is operated more than said predetermined degree, said anesthetic valve is also opened.

4,605,035
DOUBLE SEAT VALVE

Erik Rasmussen, Kolding, Denmark; Gunnar Lundquist, Hoerby, Sweden, and Stig Lading, Kolding, Denmark, assignors to Lavrids Knudsen Maskinefabrik A/S, Kolding, Denmark

Filed Sep. 14, 1984, Ser. No. 651,700
Int. Cl.[4] F16K *11/065, 31/122, 11/10*; B08B *3/04*
U.S. Cl. 137—240 11 Claims



1. A double seat valve comprising: a valve housing having at least two conduit openings for fluid inlet and outlet, two coaxial valve seats disposed between said openings, two valve closure members each guided in said valve housing for coaxial movement relative to each other and to their respective valve seats between an open position and a closed position, realizing

together in their closed position a double seal between said openings, a first closure member being adapted to abut during its opening movement against a second closure member and to move the latter the open position, a leakage space defined between said closure members in both the closed and the open position thereof, a drain outlet permanently connecting said leakage space to the outside of the valve, and drive means for moving said first and second closure members between said closed and said open positions, respectively, at least one closure member being a slide piston having radial sealing means and being operative to slide between an open position and a closed position sealingly received in a cylindrical valve seat and the other closure member being provided at its end facing said slide piston with a recess having a substantially cylindrical seat wall coaxial to said cylindrical valve seat and dimentsioned to sealingly receive during opening movement an end portion of said slide piston before said second closure member opens, at least one of said cylindrical valve seat and the cylindrical seat wall of said recess being provided with a circumferential annular groove at a position passed by the radial sealing means of said slide piston during its movement between the closed position and the position in which both closure members abut for common movement, said annular groove being dimensioned to permit in a predetermined intermediate position of said radial sealing means opposite said annular groove, in which said first closure is partially received within said second closure member, a seat-cleaning flow of liquid flows along said cylindrical valve seat and between the opposed circumferential surfaces of said radial sealing means and said annular groove into said leakage space, and wherein separate auxiliary drive means are provided for moving said first closure member between its closed position and said intermediate position.

4,605,036

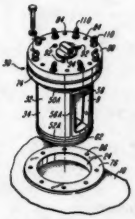
VALVE HOUSING WITH REMOVABLE SELF-CONTAINED VALVING UNIT

Russell G. Smith, Cincinnati, Ohio, and Michael J. Sandling, Flackwell Heath, England, assignors to Xomox Corporation, Cincinnati, Ohio

Continuation of Ser. No. 808,722, Jun. 22, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,004

Int. Cl.[4] F16K *43/00*

U.S. Cl. 137—327 **14 Claims**



1. A valve assemblage comprising a valve-receptive outer housing and a removable self-contained valve unit which is received in said housing for controlling the flow of fluid through said housing wherein:

said housing includes a centrally disposed upwardly opening bore the lower end of which is closed so that access to said bore occurs only via the open top thereof, axially aligned outer inlet and outlet ports spaced outwardly from and on opposite sides of said bore, said ports defining means for connecting said housing in a pipe line, and axially aligned inner inlet and outlet ports in open communication with said bore and in laterally spaced relationship with said corresponding outer inlet and outlet ports and in communication therewith;

said valve unit is removably mounted in said bore of said housing, said valve unit includes a valve body and a rotatable valving member unconnected to each other, said valve body has an upwardly opening bore therein for the reception of said rotatable valving member, said valve body provides subjacent support for said rotatable valving member to prevent downward movement of said rotatable valving member with respect to said valve body, said valve body includes axially aligned inlet and outlet ports communicating with said bore in said valve body, said valving member has a passage extending therethrough for movement into and out of alignment with said inlet and outlet ports in said valve body, said valving member blocking said inlet and outlet ports in said valve body when said passage in said valving member is out of alignment with said inlet and outlet ports in said valve body, and sealing means is disposed between said valve body and said valving member to prevent contact between said valve body and said valving member while preventing fluid leakage therebetween;

means to releasably connect said valve body to said housing;

means attached to said valve body and accessible from a location above and remote from said housing for withdrawing or lowering said valve unit from or into said bore in said housing, said attached means extending upwardly from said valve body and being accessible irrespective of whether said valve body is releasably connected to said housing by said releasable connecting means;

rotation means, separate from and independent of said attached means, accessible from a location above and remote from said housing to enable rotation of said valving member within said valve body;

and each of said attached means and said rotation means being accessible from a location above and remote from said housing without the other of said attached means and said rotation means being moved.

4,605,037

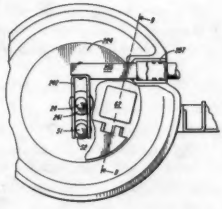
LIQUID OVERFILL PROTECTION SYSTEM

Joshua E. Rabinovich, Newton, Mass., assignor to RCR Industries, Inc., Boston, Mass.

Filed Dec. 21, 1984, Ser. No. 684,480

Int. Cl.[4] F16K *21/18*

U.S. Cl. 137—390 **4 Claims**



1. A system for preventing a liquid storage tank that is filled through an inlet, via a liquid flow path into the tank, from becoming filled beyond a desired level, the system comprising:

pressure means for delivering to first and second outlets fluid with a pressure difference therebetween that is indicative of the extent to which the tank has been filled with liquid;

valve means, in communication with the inlet, for permitting or blocking, according as the valve means is moved into an open or closed position respectively, the liquid flow path through the inlet into the tank, such valve means including a valve member movable along a central axis and having a reclosable aperature therein for insertion of a dip stick therethrough; and

control means, having ports in communication with the first and second outlets, for moving the valve means into a closed position when the fluid pressure difference be-

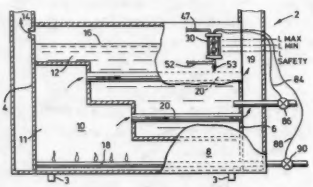
tween the first and second outlets exceeds a predetermined level, so that the liquid flow into the tank is blocked when the tank has been filled to the desired level, such control means further including (i) an enclosure having first and second regions in communication with the first and second outlets respectively, (ii) a diaphragm, displaceable by a relative difference in fluid pressure existing on each side thereof, so located in the enclosure as to form a fluid-tight separation of the first and second regions into first and second chambers, and (iii) actuation means, for moving the valve means into a closed position when displacement of the diaphragm by the fluid pressure difference thereon exceeds a predetermined limit, wherein (a) the diaphragm and first and second chambers are included in the valve member, and (b) the first and second chambers are so located that there is no communication from either of them to the reclosable aperature.

4,605,038

FLOAT VALVE CONTROL

John K. Tchitdjian, Downsview, Canada, assignor to Garland Commercial Ranges Limited, Mississauga, Canada

Filed Apr. 29, 1985, Ser. No. 728,332
Int. Cl.[4] F16K *33/00, 31/08, 31/18*
U.S. Cl. 137—399 **8 Claims**



1. In a liquid level control device for monitoring the level of water in a steam generating tank between predetermined upper, intermediate and lower levels, said tank equipped with a valve for introducing water into said tank and valve means for introducing heat energy to the water to generate steam, comprising:

(a) a glass gauge tube adapted to be vertically mounted exteriorally of said tank;

(b) a top and bottom cover covering the ends of said glass gauge tube, said bottom cover including an opening for communicating with said liquid in said tank and said top cover including an opening for communicating with the steam generated in said tank;

(c) upper and lower magnetic float means mounted co-axially within said glass gauge tube;

(d) said upper magnetic float means including means to activate said water valve when said water is in the region of said predetermined intermediate level so as to introduce water into the tank until said water is in the region of said predetermined upper level, and to deactivate said water valve and stop the introduction of water into the tank when said water is in the region of said predetermined upper level;

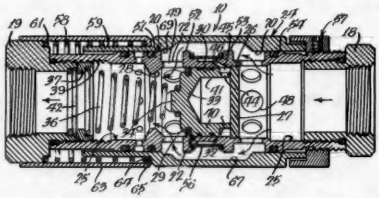
(e) said lower magnetic float means is adapted to continuously maintain the application of heat energy during said introduction of water at said intermediate level, and said lower magnetic float means is adapted to activate said heat energy valve means to stop the application of heat energy in said steam generating tank when said water is in the region of said predetermined lower level.

4,605,039

RUNAWAY PROTECTIVE FUSE VALVE

Myron J. Johnson, Arlington Heights, and Mark C. C. Kao, Elmhurst, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1984, Ser. No. 657,801
Int. Cl.[4] F16K *17/30*
U.S. Cl. 137—460 **11 Claims**



1. A runaway shut-off valve for a pneumatic implement supplied compressed air through a conduit, comprising; a valve body having an inlet and an outlet interconnected by a main passage, a poppet valve member in the passage movable from an open position permitting flow through the passage to a closed position blocking flow through the passage, spring means biasing said poppet valve member toward its open position, said poppet valve member being responsive to a predetermined pressure drop between the inlet and the outlet to move to its closed position, means for delaying the closing movement of the poppet valve member after said predetermined pressure drop is reached so that transient pressure variations do not cause unwanted poppet valve member closing, a variable orifice in the passage upstream of the poppet valve member, an axially slideable sleeve surrounding the body and controlling the effective area of the orifice, and means for interconnecting the upstream and downstream sides of the poppet valve member to reset the poppet valve member to its open position including passage means in the sleeve responsive to predetermined axial movement of the sleeve.

4,605,040

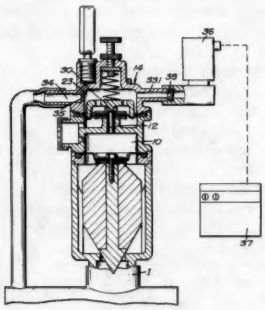
VALVE THAT AUTOMATICALLY REGULATES AN OPERATING PARTIAL VACUUM IN MILKING SYSTEMS

Theodor Meermöller, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,400
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313645
Int. Cl.[4] F16K *17/00*
U.S. Cl. 137—489 **4 Claims**

1. In a valve for automatically regulating the operating partial vacuum in a milkin system with automatic flushing means, having a main valve for admitting atmospheric air into the partially vacuumized system and including a control chamber receptive of a calibrated admission of air from the atmosphere valve including a control chamber in communication with the control chamber of the main valve through choke point blockable by the auxiliary valve, and wherein the auxiliary-valve control chamber is communicatable with means for supplying the operating partial vacuum, the improvement comprising: means forming an additional calibrated air inlet for the main-valve control chamber and which communicates with the atmosphere and means for selectively unblocking and blocking off the additional air inlet comprising a remotely

controlled automatic valve and wherein the automatic valve is automatically shifted by the automatic flushing means when



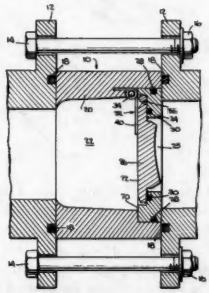
rinsing is initiated, whereby a different partial vacuum pressure can be obtained without altering the opening partial vacuum.

4,605,041

CHECK VALVE

Henry E. Teumer, 5308 Woodline Dr. South, Mobile, Ala. 36609

Filed Apr. 5, 1985, Ser. No. 720,137
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—527 **10 Claims**



1. A check valve comprising:

(a) a valve body having a bore therethrough for the flow of fluid and in the bore a counterbore whose diameter is larger than that of the bore, the counterbore having a counterbore periphery and a counterbore face inside the valve body, the counterbore face being at an angle to the axis of the bore, the counterbore face having a biasing means recess;

(b) an insert contained at least partially in the counterbore, the insert having (i) a bore therethrough for the flow of fluid, (ii) an outer periphery that corresponds to and mates with the counterbore periphery, and (iii) an inner face that corresponds to the counterbore face, the inner face having a flapper pin recess;

(c) a flapper having a flapper pin, the flapper pin being rotatably mounted in the flapper pin recess of the insert so that the flapper can rotate between open and closed positions, the closed position blocking the bore of the insert to prevent substantially the flow of fluid through the bore;

(d) biasing means mounted in the biasing means recess of the valve body to bias the flapper towards the closed position; and

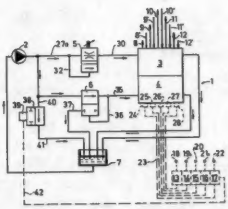
(e) blocking means inside the valve for blocking the flapper pin recess to prevent the flapper pin from leaving the flapper pin recess and for blocking the biasing means recess to prevent the biasing means from leaving the biasing means recess.

4,605,042

PILOT OIL SUPPLY ARRANGEMENT

Ted Zettergren, Nyland, Sweden, assignor to Hydrino AB, Nyland, Sweden

PCT No. PCT/SE84/00379, § 371 Date Jun. 18, 1985, § 102(e) Date Jun. 18, 1985, PCT Pub. No. WO85/02233, PCT Pub. Date May 23, 1985
PCT Filed Nov. 7, 1984, Ser. No. 749,628
Claims priority, application Sweden, Nov. 9, 1983, 8306179
Int. Cl.[4] F15B *13/02*
U.S. Cl. 137—596.12 **6 Claims**



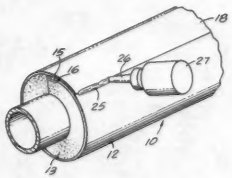
1. An arrangement for supplying pilot oil to a servo-valve arranged to activate a main valve in a hydraulic system, said hydraulic system also including a hydraulic pump, and a pressure reducing valve located between the pump and the servo-valve, and at least one auxiliary assembly arranged to deliver an electric signal to electromagnetic means arranged to activate the servo-valve, characterized in that said valve (5) located between the pump (2) and the main valve (3) is arranged to be substantially closed when standing at a given, pre-determined pressure corresponding to the servo pressure required by the servo-valve (4) to fulfil its intended function, and said valve (5) is arranged to be open when said pressure slightly exceeds said predetermined pressure.

4,605,043

SNAP-ON HEAT INSULATING JACKET AND METHOD FOR ENCLOSING DUCTING

Claude A. Grenier, Mesa, Ariz., assignor to Walter Allen Plummer, Sherman Oaks, Calif.

Filed Aug. 8, 1984, Ser. No. 638,852
Int. Cl.[4] F16L *58/00;* **B32B** *1/08*
U.S. Cl. 138—149 **2 Claims**



1. An improved method of providing installed ducting with a heat insulating jacket of the type having an impervious flexible main body of high impact strength plastic laminated to resilient heat insulation between a pair of interlockable seam members so positioned relative to the opposite edge portions of main body as to provide the same with an external guard flap sufficiently wide to bridge and extend very substantially beyond the exterior of said seam members when closed, said improved method comprising:

providing the inwardly facing side of said external guard

flap with a layer of pressure sensitive adhesive covered prior to use with a readily separable protective mask strip;

assembling said jacket about ducting and interlocking said seam members beneath said guard flap; removing said protective mask strip from said adhesive;

pressing said guard flap and said adhesive layer against the underlying surface of said main body thereby to conceal said seam members and provide the same with a vapor-tight sealed cover and

applying a bevelled layer of a permanently settable bonding agent between the free lateral edge of said guard flap and the contiguous surface of said main body lying outwardly of said free lateral edge thereby to augment the sealing of said guard flap to said main body and cooperating therewith to provide an assembled jacket with a continuous smooth outer surface free of foreign matter collecting crevices.

2. In a heat insulated seamed jacket assembly for enclosing installed ducting with a sanp-on enclosure of the type having a main outer body formed of high impact strength flexible impervious sheet plastic laminated to a resilient layer of heat insulating material affixed to the inwardly facing side thereof and provided with a pair of interlocking seam members secured to the opposite lateral portions of said main body so as to provide an external guard flap sufficiently wide to bridge and extend very substantially beyond the exterior of said seam members when snapped closed, that improvement comprising:

a layer of non-permanently masked pressure sensitive adhesive adherent to the inwardly facing surface of said external guard flap adapted, upon removal of said mask after assembly of said jacket to ducting, to hold said guard flap pressed across the exterior of said closed seam members and firmly sealed against the underlying juxtaposed exterior surface of said main body thereby to conceal said seam members; and

a permanently settable initially fluent bonding agent distributed in a bevelled layer along the free lateral edge of said guard flap and the adjacent outer surface of said main body permanently bonding said guard flap to said main body and providing said installed jacket assembly with a continuous outer surface free of foreign matter collecting crevices.

4,605,044

TAKEUP MOTION CONTROL DEVICE FOR LOOMS

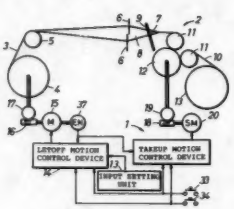
Toshiyuki Sakano, Kanazawa, Japan, assignor to Tsudakoma Corp., Kanazawa, Japan

Filed Feb. 22, 1985, Ser. No. 704,682

Claims priority, application Japan, Feb. 24, 1984, 59-032572

Int. Cl.[4] D03D *49/20*

U.S. Cl. 139—304 **12 Claims**



1. A takeup motion control device for a loom which has a servomotor to drive a winding roll for winding a woven fabric, comprising:

(a) input setting unit means for introducing into said device functions of a repetitive period and a takeup speed;

(b) function unit means for storing each of said functions as a function of rotation of the loom;

(c) arithmetic control unit means for successively reading out selected functions from said function unit means in synchronism with rotation of the loom and for generating therefrom a digital takeup command signal;

(d) driver circuit means for generating a drive signal in response to said takeup command signal and for applying said drive signal to the servomotor driving the winding roll; and

(e) digital feedback circuit means for feeding the amount of rotation of said servomotor back to said arithmetic control unit means as a digital feedback signal;

wherein said arithmetic control unit means is responsive to an operation command signal for reading out a fell position control signal from said function unit means and for rotating said servomotor so as to move a fell of the fabric in a direction specified by said fell position control signal.

4,605,045

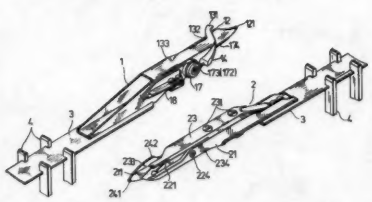
GRIPPING APPARATUS FOR SHUTTLELESS LOOMS

Lien-Shin Wu, No. 151, Section 1, Chang-Mei Road, Chang-hua City, Taiwan

Filed Sep. 9, 1985, Ser. No. 774,088

Int. Cl.[4] D03D *47/20*

U.S. Cl. 139—448 **6 Claims**



1. A gripping apparatus for shuttleless looms having a set of steel belts arranged in a opposite position to be driven to slide in a post-like track by a driving power thereof, and a protuberance provided between the track, comprising in combination:

a weft supplying fork means having a hollow body structure with its bottom portion fixed on one of the steel belts for carrying a weft, which is laid in a traverse position in the hollow body structure, from one side of a warp arrangement in a shuttleless loom, and moving along with the steel belt to a predetermined position; and

a weft transfer hook means having a body with its rear bottom portion fixed on another steel belt of the shuttleless loom and its front portion formed in a tapered edge for weft gripping operation, a through longitudinal slot formed in the body with a through hole and a screw hole respectively provided in opposite sides defining the through slot, a support stand with a plurality of screw holes formed therein provided on top of the through slot so as to form a weft guide and gripping arrangement in the body, suitable for being entirely inserted in the hollow body structure of said weft supplying fork means;

whereby, when both said weft supplying fork means and said weft transfer hook means move toward each other in an opening of the warp from opposite sides thereof along with the steel belts for weft exchanging operation, said weft transfer hook means will be completely inserted into the hollow body of said weft supplying fork means at a predetermined position in the opening of the warp, and will grip the weft traversely laid in said weft supplying fork means and transfer the weft back to the side of the warp without incurring any breaking of either the warp or the weft.

4,605,046

PROCESS AND DEVICE FOR FEEDING MACHINES FOR WELDING WIRE MESH WITH WEFT WIRES

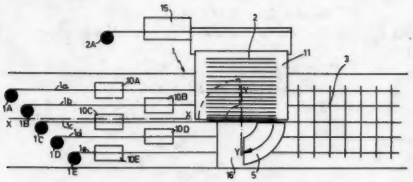
Pierre Decoux, 6, Grand'Place, B - 5950 Orp-Jauche, Belgium

Filed Apr. 26, 1984, Ser. No. 604,288

Claims priority, application Luxembourg, May 3, 1983, 84785

Int. Cl.[4] B21F *15/08*

U.S. Cl. 140—112 **17 Claims**



1. A process for feeding weft wires to a machine for welding mesh, in which a series of parallel warp wires is moved towards a welding station, as is a series of weft wires which have been cut to length, said process comprising the steps of moving forward the warp and the weft wires in substantially a same first direction, so that the cut weft wires reach a position wherein they are at a higher level than the series of parallel warp wires and then dropping and simultaneously twisting said weft wires under the effect of gravity toward a second direction displaced from said first direction by an angle, such that the weft wires are longitudinally disposed in said second direction which is substantially perpendicular to the warp wires when the weft wires reach them.

4,605,047

FILLING DEVICE FOR BULK MATERIAL, ESPECIALLY LIQUIDS

Wilhelm L. Bausch; Rolf Ströbel; Siegfried Bullinger; Harald Harlass, all of Ilshofen, and Walter Busch, Grundelhardt, all of Fed. Rep. of Germany, assignors to Bausch & Strobel Maschinenfabrik GmbH & Co., Fed. Rep. of Germany

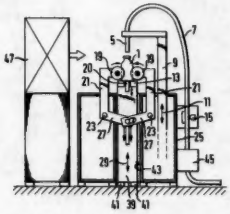
PCT No. PCT/DE83/00049, § 371 Date Nov. 15, 1983, § 102(e) Date Nov. 15, 1983, PCT Pub. No. WO83/03235, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 17, 1983, Ser. No. 557,146

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209790

Int. Cl.[4] B65B *1/32, 57/10*

U.S. Cl. 141—83 **18 Claims**



1. A device for the metered filling of bulk materials and particularly liquids in receptacles comprising:

first and second weight metering units each having:

(a) filling means for successively feeding the receptacles with bulk material; and

(b) means for sensing the weight of the receptacles and for blocking the filling means when a predetermined combined weight of the receptacle and material in the receptacle has been exceeded; said means for sensing and blocking having:

(i) first and second electric weight sensors spaced from each other by a first distance and capable of generating a signal corresponding to the weight of a receptacle and its contents being weighed thereby;

(ii) a signal sample and hold circuit coupled to each weight sensor; and

(iii) an adding circuit; and

(c) flow control means to selectively allow flow of materials from the filling means and block flow of materials from the filling means;

a first frame;

means mounting the filling means to the first frame;

conveyor means for supplying the first and second receptacles groupwise to the weight metering units for simultaneous feeding with bulk material, said conveying means having:

(a) conveyor means on a first side of the weight sensors and extending in a direction of conveyance of the receptacles; and

(b) means mounting the conveyor means to the first frame;

a second frame separate from and independent of the first frame and the filling means;

means for mounting the weight sensors to the second frame;

a plurality of pushing surfaces associated with the transport means for engaging the receptacles, said plurality of pushing surfaces spaced one from the other by the first distance;

means for operating the conveyor means intermittently to advance the pushing surfaces and thereby the receptacles in the conveying direction;

means for moving the pushing surfaces with the first and second receptacles situated over the first and second sensors away from the receptacles;

said signal sample and hold circuit triggerable by the conveyor means when the pushing surfaces are moved away from the receptacles to store a tare signal value corresponding to the empty weight of a receptacle associated therewith to be filled and after storage of the tare signal value releasing the filling means to fill the recepatcle;

a settable nominal value generator for storing a net weight signal value,

said adding circuit adding the tare signal value and the net weight signal value; and

a comparator circuit coupled to the weight sensor and the adding circuit and causing the flow control means to block flow of material from the filling means when a signal of the weight sensor represents a higher weight than the signal of the adding circuit.

4,605,048

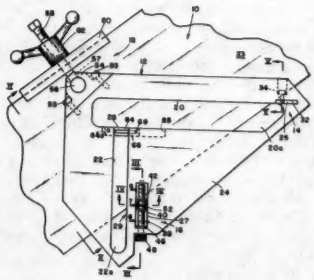
STAIR STEP ROUTING TEMPLATE

James J. Swartout, 5663 County Rd. 616, East Cedar, Mich. 49621, and William D. Scott, 10795 Dalzell Rd., Traverse City, Mich. 49684

Filed Oct. 17, 1984, Ser. No. 661,606

Int. Cl.[4] B27C *5/00*

U.S. Cl. 144—136 B **20 Claims**



1. A stair stringer routing template comprising:

a template body including opposite first and second planar faces to be laid against a stair stringer, said body defining tread and riser slots;

tread registration means for registering said tread slot with respect to a stair stringer edge;

riser registration means for adjustably registering said riser slot with respect to the stair stringer edge enabling the riser height to be varied, said tread and riser registration means being flush with or below one face when the other face is laid on the stair stringer; and

clamping means for securing said body to a stair stringer with said tread and riser registration means engaging a common edge of the stair stringer.

4,605,049

MULTIPLE CARVING MACHINE

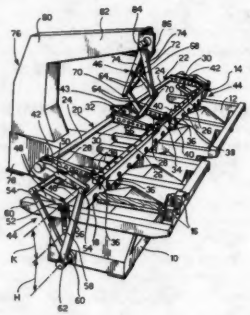
Giovanni Giordanengo, and Giorgio Cavallera, both of Boves, Italy, assignors to La Nuova Scolpitrice S.p.A., Italy

Filed Dec. 20, 1984, Ser. No. 684,398

Claims priority, application Italy, Dec. 20, 1983, 54060 B/83

Int. Cl.[4] B27C *5/00*

U.S. Cl. 144—144 R **4 Claims**



1. Multiple working machine for the simultaneous working of a plurality of workpieces, including:

a base,

a work bench supported by the base and having a plurality of retaining members for pieces to be worked and for a pattern piece,

a work frame in the form of a generally horizontal articulated parallelogram having a front side and a rear side, the work frame being movable above the work bench and carrying on its front side a plurality of working tools for the pieces to be worked and a feeler member for engagement with the pattern piece, and

an articulated arm system interconnecting the rear side of the work frame and the base and including two symmetrical lateral linkages located vertically in correspondence with the sides of the work frame, each said linkage including an upper pin connected to the work frame, a lower pin and two side pins, four connecting rods articulated together in a rhombus by said pins, a shorter arm articulated at its upper end to the lower pin of the rhombus and at its lower end to the base about a first common horizontal axis, and two longer arms articulated at their upper ends to said pins of the rhombus and at their lower ends to the base about a second common axis located below said first axis, the distance between said first and second axes being equal to the distance between the first axis and the axis of said lower pin,

wherein the improvements comprise

(a) the said work frame comprises two adjacent half-frames, and respective front and rear connections interconnecting said half-frames along their front and rear sides, and a support structure extending above said connections between the two half-frames, and

(b) the articulated arm system further includes a supplementary vertical central linkage, similar to said lateral linkages but inverted relative thereto, connecting the rear connection between said half-frames to the said support structure.

4,605,050

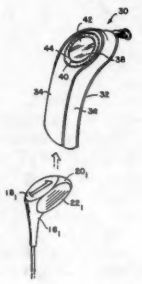
GOLF CLUB HEAD COVERS

Young J. Suk, 59 Sandy Hollow Rd., Port Washington, N.Y. 11050

Filed Aug. 9, 1984, Ser. No. 639,263

Int. Cl.[4] A63B *57/00*

U.S. Cl. 150—52 G **8 Claims**



1. a universal type of head cover for a golf club, comprising:

a head cover body for receiving a golf club therein; and

window means including an opening formed in the material of said head cover body for revealing the identifying portion of the golf club inserted therein and a transparent window member covering said opening and secured to said head cover body for protecting the golf club while revealing the identifying portion of the golf club.

4,605,051

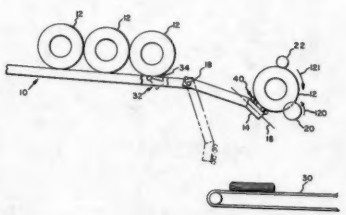
APPARATUS FOR TRIMMING TIRES

Gary W. Sloan, and Walter H. Nelson, both of Lawton, Okla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 22, 1984, Ser. No. 643,114

Int. Cl.[4] B29H *21/08*

U.S. Cl. 157—13 **12 Claims**



1. Apparatus for trimming vents from the tread area of a tire comprising, means for rotatively supporting a tire including at least one vent trimmer, each said trimmer being operative to trim vents from and support a tire; each vent trimmer comprising a frame, a pair of tire engageable tire supportable rollers rotatably mounted on said frame in spaced parallel relation, a vent trimming knife, means mounting said knife on said frame generally between said rollers, said knife having a cutting edge portion extending parallel to the rotational axes of said rollers

and lying between the common plane containing said rotational axes and a second plane extending parallel to said common plane and tangent to the tire engageable surfaces of said rollers; said vent trimmer, or trimmers, being disposed such that if the tire engageable surfaces of said rollers are all moved away from the remainder of said means for rotatably supporting a tire a distance greater than the diameter of a tire to be processed on said apparatus the remainder of said means for support cannot support said tire.

4,605,052

CURING BINDERS FOR FOUNDRY MOULDS AND CORES

John G. Morley, Alcester, England, assignor to BCIRA, Birmingham, England

Filed Aug. 13, 1985, Ser. No. 765,101

Claims priority, application United Kingdom, Aug. 16, 1984, 8420877

Int. Cl.[4] B22C *9/12*

U.S. Cl. 164—16 **8 Claims**

1. A method of curing the binder in a foundry mould or core made of a granular refractory material together with a water-soluble alkali metal polyacrylate binder including an additive which at least partially comprises lime, said method comprising passing through said mould or core a carrier gas containing a significant proportion of the vapour of an alkyl ester containing not more than three carbon atoms.

4,605,053

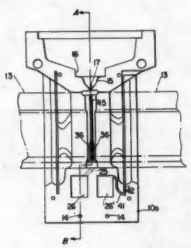
ART OF MOLD WELDING

Hans D. Fricke, Brielle, N.J., assignor to Orgo-Thermit Inc., Lakehurst, N.J.

Continuation of Ser. No. 189,521, Sep. 22, 1980, abandoned, which is a continuation of Ser. No. 43,542, May 29, 1979, abandoned. This application Sep. 5, 1984, Ser. No. 647,626

Int. Cl.[4] B23K *23/00;* **B22D** *19/04*

U.S. Cl. 164—54 **4 Claims**



1. In the process of mold welding two metal parts together having respective base sections, which includes enclosing the end sections of said metal parts in aligned end-to-end relation in a mold having an entrance gate, flowing molten metal through said entrance gate into said mold, and out of said mold at rates so related as to cause some of the metal admitted into the mold to be discharged from said mold while the rest of the molten metal accumulates as a metal bath to cause the molten metal during the early stage of its admission into the mold to preheat the metal parts, and conducting some of the said molten metal during said early stage from the entrance gate through a recess and directly onto said base sections in direct impingement with said base sections to promote better heat transfer between said molten metal and said metal parts,

the improvement comprising discharging molten metal through at least two separate exit gates in opposite sides of said mold into separate non-communicating discharge chambers of substantially identical geometry located underneath said base sections to fill said separate chambers with said molten metal, said gate on one side of said mold discharging into one chamber only and said gate on the opposite side of said mold discharging into the other chamber only, whereby exactly the same amount of molten metal washes alongside both base sections even if the centerline of the mold deviates from the vertical and thus provides the same amount of preheat to said sections.

3. In a mold for welding two metal parts together having respective bases, said mold having side walls defining a mold cavity for enclosing therein the confronting end sections of said metal parts in aligned end-to-end relationship, said mold having entrance gate means for the molten metal leading into the upper part of said mold cavity, exit gate means near the lower part of the mold cavity and discharge chamber means on the discharge side of said exit gate means, said entrance gate means and exit gate means being relatively dimensioned to cause flow through said entrance gate means at a greater rate than discharge through said exit gate means, said side walls also defining a recess constituting an extension of said mold cavity and extending from a region near the upper part of said mold cavity, along said mold cavity and to a region near the lower part of the mold cavity where said recess discharges, said recess extending at its lower discharge end to a region which is located beyond the region where the end sections of the metal parts confront and which is opposite a region of a base of one of said metal parts in a direct impinging path of the molten metal discharged from said recess, whereby heat transfer between said molten metal and the impinged base region of said metal part is promoted,

the improvement comprising at least two separate exit gate means near the lower part of said mold cavity, in opposite sides of said mold,

separate non-communicating discharge chamber means of substantially identical geometry located underneath said mold cavity,

means connecting said exit gate means in one side of said mold with one of said discharge chamber means only,

and means connecting said exit gate means in the other side of said mold with the other of said discharge chamber means only, whereby molten metal fills both said discharge chamber means and exactly the same amount of molten metal washes alongside both bases even if the centerline of the mold deviates from the vertical and thus provides the same amount of preheat to said bases.

4,605,054

CASTING APPARATUS INCLUDING A CONDUCTOR FOR ELECTROMAGNETIC INDUCTION HEATING

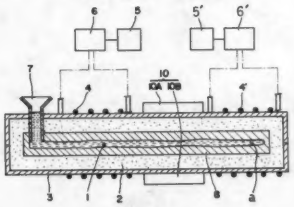
Akio Sumida, Yao, Japan, assignor to Kawachi Aluminium Casting Co., Ltd., Osaka, Japan

Filed Sep. 26, 1984, Ser. No. 654,589

Claims priority, application Japan, Sep. 26, 1983, 58-177577; Oct. 26, 1983, 58-200494; Jan. 27, 1984, 59-13575

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—147.1 **4 Claims**



1. A casting apparatus comprising a mold frame formed of a non-magnetic material, molding material disposed in the mold frame, a mold disposed in the molding material defining a molding space into which a molten metal is injected, an electri-

cal conductor for electromagnetic induction heating disposed peripherally of the mold frame, and

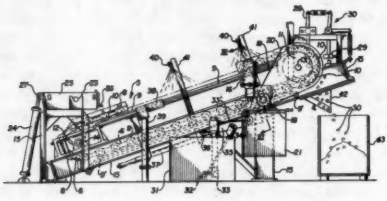
a magnet device including oppositely disposed magnets mounted along said mold frame to generate lines of magnetic force in a magnetic field therebetween across said mold, said conductor comprising two electromagnetic coils positioned along said mold frame on opposite ends of said magnet device.

4,605,055

METHOD AND APPARATUS FOR CASTING FERROALLOYS AND SLAGS IN MOULDS HAVING A LARGE RATIO OF MOULD MASS TO CAVITY SIZE

Thomas R. Allen, Jr., Sewickley, Pa., assignor to Economy Industrial Corporation, Ambridge, Pa.

Filed Oct. 19, 1984, Ser. No. 662,968
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—479 **9 Claims**



1. A method of continuously casting molten materials such as ferroalloys, deoxidizers, slags and the like, comprising the steps of:

(a) providing a train of moulds constructed of a ferrous material, each of said moulds containing at least one cavity formed therein, the ratio of the mould mass to the total mass of the cast product to be formed therein being greater than 6 to 1;

(b) pouring the molten material into the mould cavities;

(c) cooling the cast molten material in air to form a partially solidified cast product within the mould cavities;

(d) quenching the cast product and the moulds with a water spray means to further cool the cast product and the moulds; and

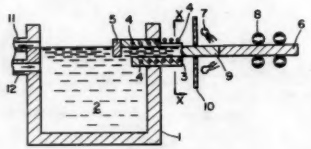
(e) discharging the solidified cast product from the moulds.

4,605,056

PROCESS AND APPARATUS FOR THE HORIZONTAL CONTINUOUS CASTING OF A METAL MOLDING

Atsumi Ohno, Chofu, Japan, assignor to Nippon Light Metal Company Limited and O.C.C. Company Limited, both of Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,019
Claims priority, application Japan, Jun. 13, 1983, 58-104248
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—490 **8 Claims**



1. A continuous casting process comprising: supplying molten metal into a generally open top horizontal mold having an inner wall maintained at a temperature above the solidification temperature of said metal, while maintaining said molten metal under a substantially zero pressure at the outlet opening of said mold; applying heat to the exposed surface of the molten metal in said mold through the open top of said mold by heater means spaced out of contact with said molten metal surface to maintain said surface above the solidification temperature of said metal; and drawing a dummy bar horizontally away from said outlet opening to cause said molten metal to solidify continuously after exiting the mold to form the leading end of a molded product.

4,605,057

PROCESS FOR PRODUCING CORE FOR CASTING

Junji Sakai, Ibaraki; Syogo Morimoto, Katsuta; Minoru Morikawa, Katsuta, and Yoshitsugu Maehashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1983, Ser. No. 520,518
Claims priority, application Japan, Aug. 6, 1982, 57-136264
Int. Cl.[4] B22C *1/02, 9/00*
U.S. Cl. 164—519 **21 Claims**

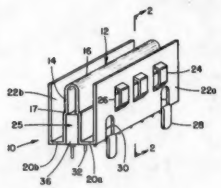
1. A process for producing a core for casting which comprises mixing refractory particles with colloidal alumina to give a slurry, filling said slurry in a cavity of a pattern made of a synthetic resin that has a property of absorbing water, whereby the slurry is formed into a solid due to removal of water from said slurry containing colloidal alumina by said pattern made of said synthetic resin, followed by drying and firing.

4,605,058

HEAT DISSIPATING RETAINER FOR ELECTRONIC PACKAGE

Seymour Wilens, Wantagh, N.Y., assignor to The Staver Company, Inc., Bay Shore, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,743
Int. Cl.[4] F28F *7/00*
U.S. Cl. 165—80.2 **4 Claims**



1. A retainer for a flat, rectangular package of electronic components, comprising:

a generally W-shaped structure having an inner, inverted, U-shaped channel section open at opposite front, back, and bottom ends to receive said flat package of electronic components in frictional engagement under spring tension with sides of said package;

said structure further having a pair of outer side walls laterally spaced from said channel section by integral inner bottom walls to dissipate by conduction, convection and radiation heat generated in said package; and

wherein said channel section comprises:

an upper springy ridge integral with a pair of laterally spaced first inner walls;

a pair of outwardly flaring narrow bent wall portions respectively integral with said first inner walls to serve as abutments for limiting insertion of said package into said channel section; and

a pair of second inner walls respectively integral with said bent wall portions and with said inner bottom walls, said second inner walls normally being inclined toward each other, and assuming parallel position only when said pack-

age is inserted into said channel section while said springy ridge flexes to retain said package in said channel section under said spring tension.

4,605,059

HEAT EXCHANGER

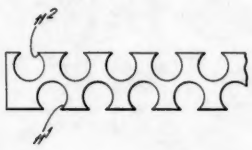
Michael J. Page, Maltby, Nr. Rotherham, England, assignor to Laporte Industries Limited, London, England

Filed Dec. 5, 1984, Ser. No. 678,228

Claims priority, application United Kingdom, Dec. 21, 1983, 8334078

Int. Cl.[4] F28D *1/00*

U.S. Cl. 165—163 7 Claims



1. A heat exchanger element comprising a plurality of coils of tubing so arranged that a plurality of parallel flows of heat exchange fluid may be passed therethrough wherein the coils are of cylindrical conformation and of differing diameters each coil being mounted co-axially about the coil of next smaller diameter and the plurality of coils being supported on a central longitudinal frame member co-axially positioned with respect to the coil characterized in that the tubing is flexible tubing of plastics material and in that each coil is spaced outwardly with respect to the frame member from the coil of next smaller diameter by means of a plurality of slat members lying therebetween and longitudinally arranged with respect to the frame member, the slat members lying in spaced radial planes passing through and intersecting at the axis of the frame member, the innermost plurality of the slat members being attached to the frame member and the free longitudinal edges of the slats having a plurality of recesses, the recesses have mouths of a lesser dimension than the tubing comprising the turns of the coil to be capable of releasably holding turns of coil therewithin, and the coils being supported in position by successive turns thereof being inserted within said recesses.

4,605,060

HEAT EXCHANGER PLATE

Jarl A. Andersson, and Leif Hallgren, both of Lund, Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

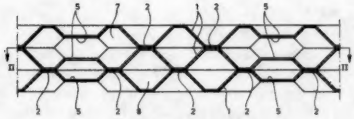
PCT No. PCT/SE82/00393, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983, PCT Pub. No. WO83/01998, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 23, 1982, Ser. No. 517,529

Claims priority, application Sweden, Nov. 26, 1981, 8107040

Int. Cl.[4] F28F *3/00*

U.S. Cl. 165—166 6 Claims



1. In a plate heat exchanger, the combination comprising two adjacent plates defining a passage for flow of a heat exchanging medium, each of said two plates having a central plane and a corrugation pattern forming ridges projecting in opposite directions from said central plane, the ridges on each face of the plate being parallel to the ridges on the opposite face of the plate and forming parallel grooves in said opposite face of the plate, the ridges and grooves of each plate crossing ridges and grooves of the other plate, each plate having first regions where a plurality of ridges of the plate engage a plurality of crossing ridges of the adjacent plate to form a substantial number of supporting points in said passage, ridges of at least one plate having recesses at selected second regions where a plurality of ridges of said one plate would engage a plurality of crossing ridges of the adjacent plate except for said recesses, whereby said number of supporting points in said passage is less than it would have been without said recesses.

4,605,061

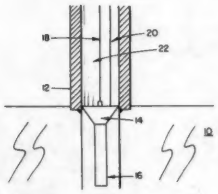
APPARATUS FOR PLUGGING A WELLBORE IN HIGH IMPULSE FRACTURING

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,429

Int. Cl.[4] E21B *33/134, 43/263*

U.S. Cl. 166—63 16 Claims



1. An apparatus for sealing a wellbore after placing a canister containing a propellant into a wellbore where said seal forms a solidified gel capable of withstanding energy released from ignition of said propellant comprising:

(a) a means for placing and containing a pumpable gel mixture at a predetermined level in said wellbore where said means for containing said pumpable mixture forms an integral part of said canister which is suspended into said wellbore from a position at or above the ground level; and

(b) a means for pumping said gel mixture into the wellbore above the means for containing the pumpable mixture which mixture becomes a solid sufficient to withstand the energy released from an ignited propellant, including heat and pressure.

4,605,062

SUBSURFACE INJECTION TOOL

Joseph N. Klumpyan, and Richard J. Ross, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 10, 1985, Ser. No. 742,994

Int. Cl.[4] E21B *33/124, 34/14, 43/14, 23/06*

U.S. Cl. 166—127 20 Claims

1. A tool for use in a well bore for producing hydrocarbons through a tubing string from subterranean hydrocarbon-bearing formations having a plurality of vertically spaced perforations therein, the tool comprising:

a tubular body assembly;

a plurality of radially expandable and retractable packing elements mounted in axially spaced relation on the tubular body assembly, each of said elements comprising means for sealing the annular area between the tubing string and the well bore upon radial expansion thereof;

a rigid mandrel assembly attachable to the tubing string, insertable in said tubular body assembly, and having a mandrel bore communicable with the tubing string;

at least one horizontal locking groove extending partially around the exterior of said mandrel;

means on the interior of said tubular body assembly defining a toothed segment engagable with said locking groove

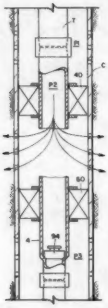
during run-in to secure said mandrel against movement relative to said tubular body assembly;

said mandrel being releasable from said tubular body assembly by limited angular movement relative to said tubular body assembly;

means for expanding and retracting said packing elements upon axial manipulation of the mandrel relative to said tubular body assembly;

a radial injection path communicable between the mandrel bore and the exterior of the tool, at least one upper packing element being above the injection path, and at least one lower packing element being below the radial injection path;

means for sealing the mandrel bore below the injection path; upper and lower pressure unloading means respectively



above and below the radial injection path for separately equalizing the pressure differential across said packing elements above and below the injection path in response to axial manipulation of said mandrel, whereby successive perforations can be separately treated by injecting fluids through the tubing string and injection path; said upper and lower pressure-unloading means comprising an axially extending bypass communicable with the injection path, with an upper portion communicable to the exterior of the tool above the upper packing elements and with a lower portion communicable to the exterior of the tool below the packing elements, upper seal means shiftable between positions opening and closing the axially extending bypass upper portion and lower seal means being shiftable between positions opening and closing the axially extending bypass lower portion.

4,605,063

CHEMICAL INJECTION TUBING ANCHOR-CATCHER

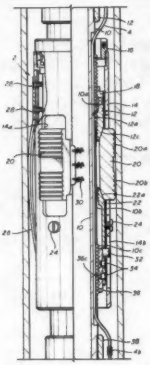
Richard J. Ross, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed May 11, 1984, Ser. No. 609,327

Int. Cl.[4] E21B *23/00*

U.S. Cl. 166—216 **3 Claims**

1. Apparatus engagable with the wall of a well bore and attached to a tubing string in the well bore to anchor the tubing string against axial movement, in which at least one separate fluid pipe is attached to the exterior of the tubing string, the apparatus comprising: a tubular body connected to the tubing string and having an axial passage of area equal to the tubing string bore communicating with the bore of the tubular body; anchoring slip means concentrically encircling the tubular body; expander means concentrically encircling the tubular body and adjacent to the anchoring slip means and relatively axially shiftable for expanding the anchoring slip means; means responsive to rotation of the tubular body for shifting the expander means axially relative to the tubular body to expand the slip means; said tubular body having an axially extending groove in its exterior surface extending axially through the encircling expander means and slip means, a second pipe disposed in the full length of said groove; and means for attaching the second pipe to the separate fluid pipe to conduct fluids to



a well bore location below said tubular body without reduction in fluid passage area of the tubing string.

4,605,064

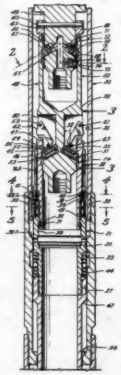
WELL APPARATUS

Neil H. Akkerman, Houston, Tex., assignor to AVA International Corp., Houston, Tex.

Continuation of Ser. No. 536,278, Sep. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 489,827, Apr. 29, 1983, Pat. No. 4,522,259. This application Mar. 5, 1985, Ser. No. 708,536

Int. Cl.[4] E21B *23/02*

U.S. Cl. 166—237 **42 Claims**



1. For use in a well conduit having a seat therein and an internal groove thereabout, apparatus comprising a running tool adapted to be raised and lowered within the well conduit, a well tool, means for connecting the well tool to the running tool to permit the well tool to be raised and lowered with the running tool, locking means carried by the well tool for radial expansion and contraction with respect thereto, said well tool having a shoulder thereon engageable with the seat to dispose the locking means opposite the groove in the well conduit, means shiftable in one vertical direction, following engagement of the shoulder with the seat, for causing the locking means to be expanded into locking position within the groove,

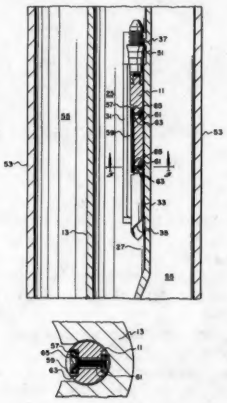
and means operable upon further shifting of said shiftable means in said one vertical direction, following expansion of said locking means into locking position, for locking said shiftable means against movement in the opposite direction in response to an axial force in said opposite vertical direction, and means automatically responsive to locking of said shiftable means for disconnecting the running tool from the well tool in order to permit retrieval of the running tool from the well conduit.

4,605,065

METHOD AND APPARATUS FOR MONITORING WELL TUBING FLUID

Bolling A. Abercrombie, Montgomery County, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jun. 26, 1985, Ser. No. 748,785
Int. Cl.[4] E21B *41/02, 47/00*
U.S. Cl. 166—250 **10 Claims**



1. An apparatus for monitoring corrosive effects of fluid in a well, for use with a well tubing mandrel having a main bore and a side pocket offset from the main bore, the apparatus comprising:

a carrier, mounted in the side pocket; and

a coupon secured to the carrier, and positioned within a slot between the main bore and the side pocket.

8. A method of monitoring fluid within well tubing, comprising the steps of:

installing a well tubing mandrel downhole in well tubing, said mandrel having a main bore, a side pocket offset from the main bore, and a slot along the length of the side pocket adjacent the main bore;

mounting a coupon on a carrier, said coupon being a strip of selected material;

placing the carrier into the side pocket, positioning the coupon within the slot for a specified time period;

removing the carrier from the well tubing; and

inspecting the coupon.

4,605,066

OIL RECOVERY METHOD EMPLOYING CARBON DIOXIDE FLOODING WITH IMPROVED SWEEP EFFICIENCY

Nizar F. Djabbarah, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,465
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—273 **7 Claims**

1. A method of recovering oil from a subterranean, oil-containing, permeable formation penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with the formation, comprising steps (a) through (d) in the recited sequence:

(a) injecting carbon dioxide into the formation through the injection well and recovering fluid including oil from the formation through the production well until carbon dioxide breakthrough occurs at the production well, thereby forming a CO_2-swept zone in the formation;

(b) subsequently injecting a mixture of carbon dioxide and an intermediate hydrocarbon into the CO_2-swept zone through the injection well, thereby decreasing the permeability of the CO_2-swept zone and increasing the pressure required to inject the mixture into the CO_2-swept zone, and recovering fluid including oil from the formation through the production well until the injection pressure increases to a value about 10% above the injection pressure at the initiation of the injection of said mixture;

(c) thereafter injecting CO_2 into the formation through the injection well and recovering fluid including oil from the formation through the production well until carbon dioxide breakthrough occurs at the production well; and

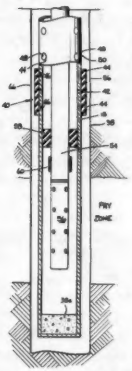
(d) thereafter repeating steps (b) and (c) for a plurality of cycles.

4,605,067

METHOD AND APPARATUS FOR COMPLETING WELL

Guy C. Burton, Jr., Casper, Wyo., assignor to ReJane M. Burton, Casper, Wyo., a part interest

Filed Mar. 26, 1984, Ser. No. 593,394
Int. Cl.[4] E21B *33/126, 33/14, 43/11*
U.S. Cl. 166—285 **18 Claims**



1. A method for the completion of a well comprising:

drilling a first well hole and providing said first well hole with at least a first casing to a predetermined depth;

drilling a second well hole having a smaller diameter than said first well hole to a pay zone at which quantities of gas are encountered;

providing a second casing positioned within said first casing, forming a first annular space between said first and second casings and extending said second casing into said second well hole;

said second casing having an outer diameter less than the diameter of said second well hole and forming a second annular space between said second casing and said second well hole;

sealing the interior of said second casing by providing a seal spaced from the wall of said second well hole and positioned within the well in the interior of said second casing so as to seal the interior of said second casing above said seal from fluid communication with any fluid in said sec-

ond well bore exterior to said second casing so that said gas from said second well hole is prevented by said seal from entering the portion of the interior of said second casing which is above said seal such that said gas will flow through said second and said first annular spaces;

positioning tubing within said second casing in a position entirely above said seal while said gas is flowing through said second and said first annular spaces, forming a third annular space between said second casing and said tubing;

forming an opening in said casing within the well above said seal in the interior of said second casing;

allowing said gas from said pay zone to enter into said tubing using said opening in said second casing;

providing a flowable sealing material in said second annular space; and

preventing said flowable sealing material from being located laterally adjacent to said pay zone from which said gas is to be received.

4,605,068

WELL TREATING COMPOSITION AND METHOD

Peter J. Young, and Julian M. E. Romocki, both of Calgary, Canada, assignors to Amerigo Technology Limited, Calgary, Canada

Division of Ser. No. 97,151, Nov. 26, 1979, abandoned. This application Dec. 17, 1981, Ser. No. 331,761

Claims priority, application Canada, Apr. 20, 1979, 325951

Int. Cl.[4] E21B *43/26, 43/27*

U.S. Cl. 166—307 **15 Claims**

1. A method of treating a subterranean limestone or dolomitic formation or a sandstone formation having a substantial carbonate content associated with a well completed in said limestone or dolomitic formation or said sandstone formation having a substantial carbonate content comprising displacing into said formation through said well an effective amount of an acidic aqueous solution comprising from about 5 to about 36% by weight phosphoric acid, from about 0.6 to about 5 weight % of a highly polar surface active agent which is a citric acid-monoethanolamine elimination reaction product characterized by a visible absorption spectrum which displays an increasing extinction coefficient from the red to the near U.V. with some structure, an absorption maximum at 475 nm, a plateau from 460 nm to 465 nm, an absorption maximum at 450 nm, and extinction coefficients as follows:

ϵ_{475}=0.325 l/gm.cm

ϵ_{462}=0.379 l/gm.cm

ϵ_{450}=0.509 l/gm.cm,

an effective amount of a ferrous metal corrosion inhibitor, and an amount of a phosphate crystal modifying agent sufficient to control crystal growth, minimize crystal agglomeration and minimize crystal adhesion to the formation, said phosphate crystal modifying agent being selected from the group consisting of polyacrylate polymers and blends of such polymers with a phosphonic acid or a phosphonate.

4,605,069

METHOD FOR PRODUCING HEAVY, VISCOUS CRUDE OIL

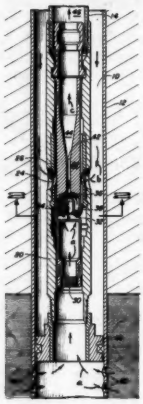
Gifford G. McClaflin; Henry A. Bourne, and Donald L. Whitfill, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 9, 1984, Ser. No. 658,720

Int. Cl.[4] E21B *43/00;* **F04F** *5/02*

U.S. Cl. 166—310 **11 Claims**

1. In a method of producing hydrocarbon liquid having an A.P.I. gravity of less than about 15 degrees from a hydrocarbon-bearing formation in which the hydrocarbon liquid is propelled to the surface by a jet pump utilizing a jetted power fluid which entrains the hydrocarbon liquid in a jet stream, the improvement which comprises providing a power fluid comprising a water and surfactant solution and emulsifying the hydrocarbon liquid in the solution within the jet stream



whereby heavy, viscous hydrocarbon liquid can be economically produced.

4,605,070

REDUNDANT SAFETY VALVE SYSTEM AND METHOD

Arthur J. Morris, Magnolia, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Apr. 1, 1985, Ser. No. 718,628

Int. Cl.[4] E21B *19/16, 34/10, 34/14*

U.S. Cl. 166—380 **4 Claims**

1. The method of installing a redundant safety valve system in a well comprising,

threadably connecting a tubing retrievable safety valve in a first well production tubing in a well casing in which the safety valve has a bore of substantially the same size as the bore of the first well tubing,

installing the first well tubing and safety valve in the well,

threadably connecting a landing nipple to a second well tubing in which the landing nipple has a bore of substantially the same size as the bore of the second well tubing, said second well tubing having a bore greater than the bore of the first well tubing, and said landing nipple having means in the bore of the landing nipple for receiving a wireline retrievable safety valve and including hydraulic control means extending between the landing nipple and the casing for controlling a wireline retrievable safety valve,

connecting the second well tubing and landing nipple to and above the first well tubing, and

installing the second well tubing in the well casing extending to the well surface.

3. A redundant safety valve system for a well comprising,

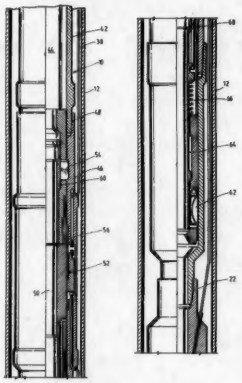
a first well production tubing have a bore therethrough positioned in a well casing below the well surface,

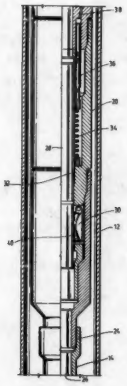
a tubing retrievable safety valve threadably connected in the first well tubing and having a bore of substantially the same size as the bore of the first well tubing, said tubing retrievable safety valve including hydraulic control means extending from said valve to the well surface between the valve and said casing for controlling said valve and including means for locking the valve in the open position,

a second well production tubing having a bore larger than the bore of the first well tubing, said second well tubing connected to the first well tubing above the first well tubing and extending to the well surface through the casing,

a landing nipple threadably positioned in the second well

tubing, said nipple having substantially the same size bore as the bore of the second well tubing, said landing nipple including means in its bore for receiving a wireline re-





trievable safety valve and including hydraulic control means extending between the landing nipple and the casing for controlling a wireline retrievable safety valve.

4,605,071

THERAPEUTIC HORSESHOE

David P. McKibben, Gilroy, Calif., assignor to Sir Pegasus, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 619,616, Jun. 11, 1984, abandoned. This application Dec. 6, 1984, Ser. No. 679,202

Int. Cl.[4] A01L *5/00*

U.S. Cl. 168—12 **6 Claims**

1. A plastic horseshoe comprising:

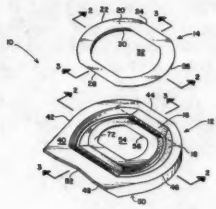
(1) a plastic frame having an upper surface for engaging a horse's hoof, a lower ground engaging surface, a front toe portion, left and right side portions and a rear heel portion, such portions being interconnected and surrounding a central opening extending through the frame from its upper surface to its lower surface,

(2) said frame having an outer rim portion adapted to be nailed to the wall of a horse's hoof and having an inner portion surrounding said central opening, said inner portion having a bottom surface which is elevated above the bottom surface of the rim portion, said inner portion being formed with a recess open at the top, closed at the bottom and surrounding said central opening, and

(3) a plastic insert within and filling said recess and surrounding substantially completely the central opening

(4) said frame being of hard but flexible plastic material

(5) said insert being of more resilient, deformable plastic



providing a cushion upon impact of a horse's hoof with the ground and which will return to its original shape upon release of pressure,

(6) whereby upon impact with the ground the inner portion of the frame will initially clear the ground, will then flex toward the ground and will return to its initial position when the hoof is raised from the ground, and the insert will cushion shock to the hoof and will provide a pumping action.

4,605,072

SOIL CULTIVATING APPARATUS

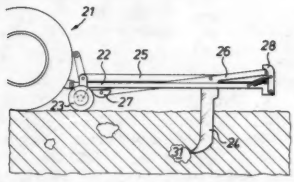
Fred A. Jones, Redhouse Farm, Spalford Lane, North Scarle, Lincoln, England, assignor to Fred A. Jones and Jean Jones, both of North Scarle, England

Filed Apr. 18, 1983, Ser. No. 486,194

Claims priority, application United Kingdom, Apr. 20, 1982, 8211396

Int. Cl.[4] A01B *61/00*

U.S. Cl. 172—236 **4 Claims**



1. Soil cultivating apparatus comprising:

(a) a main support member securable to a towing vehicle and extending rearwardly therefrom;

(b) an elongated secondary member pivoted to said main support member at the front ends of the main support member and the secondary member relative to the direction of travel of the apparatus in use so as to pivot in a vertical plane;

(c) a soil cultivating tool pivotally suspended from a rearward part of said secondary member;

(d) a rigid control arm extending from said tool and having a forward end carrying a ground-engaging member whereby upon pivotal movement of said tool upon encountering an obstacle the ground-engaging member will move downwardly to engage the ground and accelerate the pivoting of the tool rearwardly and upwardly out of the soil and pivot said secondary member upwardly; and

(e) a force sensitive release means carried at least in part by

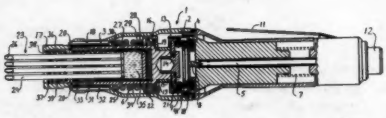
said main support member and holding said control arm against movement relative to said secondary member and to said main support member until the force on said tool tending to pivot said control arm relative to said secondary member exceeds a predetermined value, and for releasing said control arm in response to said force exceeding a predetermined value.

4,605,073

DEVICE IN NEEDLE HAMMERS

Göran A. Nilsson, Box 61, Sandarne, Sweden (S-820 22); Kjell E. E. Edström, Åsbäcksgatan 43, Söderhamn, Sweden (S-826 00), and Henry W. Wiklund, Bäckvägen 1, Arbrå, Sweden (S-820 10)

Filed Jun. 27, 1984, Ser. No. 624,928
Claims priority, application Sweden, Jul. 1, 1983, 8303760
Int. Cl.[4] B21C *43/00*
U.S. Cl. 173—51 **4 Claims**



1. A needle hammer device including a working member (3), at least one holder (31,39) formed from a flexible material and mounted to said working member, said holder defining a plurality of openings therein for receiving a neelde in each of said openings and retaining said needles in said openings by frictional engagement with said holder, one end of each of said needles extending from said holder in a forward direction, said working member being reciprocatingly movable together with said holder and said needles in the axial direction of said needles, said needles being retained in said holder to permit individual axial movement of each of said needles relative to said holder, within predetermined limits, by overcoming the resistance of the frictional engagement by said holder, the other end of each of said needles extending from said holder in a rearward direction, a sealed chamber for holding a fluid medium defined in said working member behind said holder such that said other ends of said needles extend into said chamber, wherein axial movement of any of said needles into said chamber causes fluid medium in said chamber to exert a force on said other ends of each of said needles.

4,605,074

METHOD AND APPARATUS FOR CONTROLLING BOREHOLE PRESSURE IN PERFORATING WELLS

Virgil H. Barfield, 3410 Mount Vernon, Houston, Tex. 77006

Continuation-in-part of Ser. No. 459,771, Jan. 21, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 661,207
Int. Cl.[4] E21B *43/11, 47/66*
U.S. Cl. 175—4.52 **57 Claims**

1. A wireline operated well perforating apparatus adapted to be positioned below a packer mounted in a wellbore comprising:

(a) a running tool adapted to be supported on a wireline;

(b) a pressurized surge tank operably connected to said running tool;

(c) means for supporting a perforating gun on said surge tank and means for selectively opening communication between said surge tank and said wellbore to reduce pressure in said wellbore adjacent said surge tank; and

(d) frangible valve means in the upper end of said surge tank to close communication between pressure from well fluid above said surge tank and pressure in said wellbore below said surge tank.

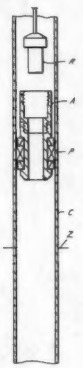
31. The method of completing a well comprising:

setting a packer in the well bore at a desired distance above the zone to be perforated,

running a retrievable running tool having a pressurized surge tank and a perforating gun connected thereto and adapted to extend below said packer until the running tool reaches said packer and said perforating gun is below said packer,

actuating said perforating gun to perforate the well bore below said packer,

disconnecting the running tool from the surge tank and perforating gun,



retrieving said retrievable running tool,

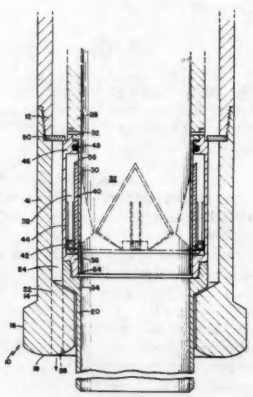
running a string of tubing and landing the lower end of same in the upper end of said surge tank and rupturing a frangible disk in the upper end of said surge tank to open communication therethrough to receive fluid from below said packer.

4,605,075

SHROUDED CORE CATCHER

Steven R. Radford, West Jordan, and J. Stanley Davis, Sandy, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

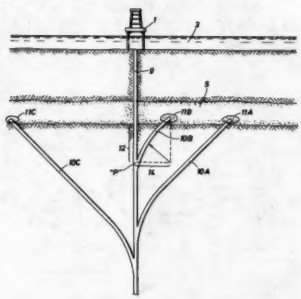
Filed Aug. 31, 1984, Ser. No. 646,576
Int. Cl.[4] E21B *25/00, 49/02*
U.S. Cl. 175—58 **7 Claims**



1. An improvement in the coring tool for cutting a core and including an inner tube longitudinally displaceable within said coring tool comprising:

a smooth inner cylindrical sleeve for receiving said core;
a core catcher concentrically disposed outside said sleeve and concealed from said core; and
means coupled to said sleeve and core catcher for temporarily longitudinally connecting said core catcher and said sleeve in a first configuration, and for selectively disconnecting said core catcher and said sleeve in a second configuration to allow relative longitudinal displacement of said sleeve with respect to said core catcher to unconceal said core catcher with respect to said core;
wherein said means for connecting and selectively disconnecting said core catcher and sleeve is concentrically disposed outside of said core catcher;
wherein said means for connecting and selectively disconnecting said core catcher and sleeve longitudinally restrains said core catcher within said coring tool, and then selectively disconnects said sleeve from said core catcher, thereby permitting said core catcher to become unconcealed,
whereby interfering contact between said core catcher and said core is substantially eliminated.

4,605,076
METHOD FOR FORMING BOREHOLES
Milton E. Goodhart, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.
Filed Aug. 3, 1984, Ser. No. 637,396
Int. Cl.[4] E21B *7/04*
U.S. Cl. 175—61 **7 Claims**

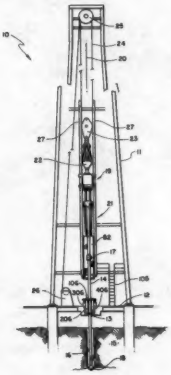


1. A method of boring a well hole into a target zone in a formation comprising the steps of
boring an essentially vertical hole to at least a predetermined depth below the target zone in the formation, said vertical hole being laterally displaced from said target zone,
lowering via said vertical hole drilling apparatus including a mud pressure driven motor and drilling bit to said predetermined depth,
applying pressurized drilling mud from said vertical hole to said mud motor, and
mechanically boring with said mud motor and said drilling bit initially in an upward direction from the verticle hole a deviated hole into the target zone.

4,605,077
TOP DRIVE DRILLING SYSTEMS
George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.
Filed Dec. 4, 1984, Ser. No. 677,988
Int. Cl.[4] E21B *19/16*
U.S. Cl. 175—85 **12 Claims**

1. Well apparatus comprising:
a back-up tool for holding the upper end of a string of pipe against rotation as an additional section of pipe is connected thereto; and
powered means for moving said tool to engage said upper end of the string;
said powered means being operable through a predetermined range of movement, and acting to move said back-up tool vertically during an inital portion of said range of movement and then move the tool between an active position at the axis of the well and a retracted position offset to a side of said axis at the end of said range of movement.

6. Well drilling apparatus, comprising;
a rig having a rig floor;
a top drive unit including a rotary drive element detachably connectible to an upper threaded end of a drill string and a motor for driving said element to turn the string and drill a well, said unit being movable downwardly with the string to a position in which said upper end of the string is in a bottom position thereof near the rig floor;
means for supporting said string independently of the top drive unit so that said element of the top drive unit can be detached from the string and an additional section of pipe



can be connected between the top drive unit and said upper threaded end of the string and be rotated into threaded engagement with the upper threaded end of the string;
a back-up tool for engaging said upper end of the drill string and preventing rotation thereof as said pipe section is connected thereto;
means mounting said back-up tool for movement between an inactive position offset to a side of the drill string and an active position of gripping engagement with said upper threaded end of the string, with said upper threaded end raised above said bottom position near the rig floor and to a higher level at which said upper threaded end of the string is essentially inaccessible from the rig floor; and
said mounting means being constructed to mount said back-up tool for swinging movement to said inactive position and for vertical shifting movement; and
a common power actuated unit for effecting both said swinging movement and said vertical shifting movement of the tool.

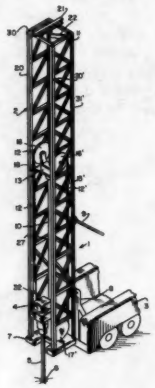
4,605,078
CARRIAGE FEED SYSTEM
Ronald F. Bukovitz, Richardson, Tex., and Walter C. Vliet, Landing, N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jun. 6, 1984, Ser. No. 617,922
Int. Cl.[4] E21B *19/08*
U.S. Cl. 175—162 **7 Claims**

1. In an earth and rock drilling machine having a tower, a drilling head, a first guide means for guiding said drilling head

for translation along a preferred path with respect to said tower and drill means attached to said drilling head for drilling holes, feed means for effecting said translation of said drilling head comprising:

(a) a double rodded hydraulic cylinder having two cylinder rods, said cylinder extending substantially the length of the tower and having a cylinder barrel which traverses said cylinder rods from a position near the bottom of the tower to a position near the top of the tower;

(b) an upper wheel and a lower wheel for rotation being attached to said cylinder barrel, each wheel having a second guide means formed in the periphery thereof for



engaging and guiding a flexible segment, said upper and lower wheels arranged so that their respective second guide means are coplanar;

(c) at least one flexible segment joined to form the continuous unitary loop disposed about a portion of the periphery of said upper and lower wheels and in guiding engagement with said second guide means thereof;

(d) an anchor means located approximately midway on said tower for rendering a first portion of said at least one flexible segment stationary and immovable with respect to said tower; and

(e) coupling means for attaching a second portion of said at least one flexible segment to said drilling head.

4,605,079

DRILL BIT

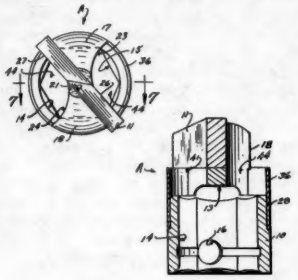
Donald L. Leibee, and Owen K. Crist, both of Bedford, Pa., assignors to The Marmon Group, Chicago, Ill.

Filed Jun. 20, 1985, Ser. No. 746,804

Int. Cl.[4] E21B *10/36*

U.S. Cl. 175—410 **21 Claims**

1. A drill bit for use in combination with a through-the-steel drill stem, said drill bit including a drill tip; an elongated body portion having a lower portion for interconnection of the drill bit to said drill stem, a head portion for receiving said drill tip, and a bore through which cuttings may be removed to said drill stem; and sleeve means attached about said body portion intermediate the lower portion and the head portion thereof, said head portion including a web extending transversely across said bore and having opposed axially extending faces contoured from the periphery of said body portion toward the axis thereof and leading from said drill tip to said bore, the upper reaches of said axially extending faces opening to the cutting edges of said drill tip and the lower reaches thereof opening to said bore, said sleeve means extending from said body portion and in opposed spaced apart axial relation to and above the lower reaches of said axially extending faces of said web whereby said axially extending faces of said web and the inner surface of said sleeve means define drill cut receiving



ports opening upwardly to said drill tip and opening downwardly to said bore.

4,605,080

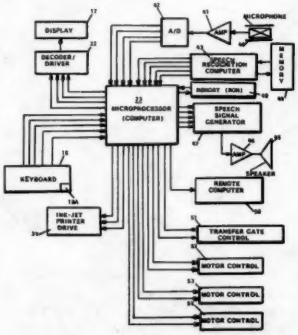
SPEECH RECOGNITION CONTROL SYSTEM AND METHOD

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 401,116, Jul. 23, 1982, Pat. No. 4,544,929, which is a continuation of Ser. No. 167,673, Jul. 11, 1980, Pat. No. 4,342,038. This application Mar. 25, 1985, Ser. No. 715,624

Int. Cl.[4] G01G *23/38, 23/22, 19/00;* **G01D** *9/00*

U.S. Cl. 177—4 **20 Claims**



1. Weighing apparatus comprising:

first means for sensing the weight of an article and generating an analog signal indicative of the weight sensed,

second means for receiving, processing and analyzing said analog signal and generating first digital signals indicative of the weight sensed by said first means,

third means including electrically operated indicating means for indicating a variable associated with the article sensed by said first means,

a microphone,

first electronic computing means connected to receive speech signals output by said microphone, process and analyze same and generate first control signals,

second electronic computing means operable to receive said first digital signals and said first control signals and to perfrom a computing function with respect to the information defined by said signals and to generate second control signals defining information relating to computations involving said first digital weight defining signals

and said first control signals generated by said first electronic computing means, and

means for applying said second control signals to selectively control the operation of said electrically operated indicating means to cause said indicating means to indicate the information defined by said second control signals.

4,605,081

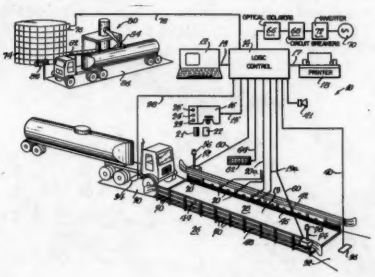
AUTOMATIC TRUCK MEASURING SYSTEM AND PROCESS

Paul K. Helmly, Jr., Richmond Hill; Fred D. Forster, Jr., Savannah, both of Ga.; Patrick E. Gower; Steven D. Holdaway, both of Houston, Tex.; Stanley W. Tutman, Naperville, Ill.; Timothy J. Beissel, Whiting, Ind.; Robert J. Needham, Chicago, Ill., and Arthur J. Lasky, Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1984, Ser. No. 656,034

Int. Cl.[4] G01G *19/00, 19/22, 19/02*

U.S. Cl. 177—25 **12 Claims**



1. An automatic truck measuring system, comprising:

a truck-supporting platform having elongated sides, at least one inclined entrance ramp for access of a truck and a scale for determining the actual gross weight of said truck, said ramp containing a vehicle detector loop;

an identification badge input reader and scanner for reading a driver identification card of the truck driver and a product identification card selected by said truck driver to indicate the product the driver wants loaded in his truck;

optical sensing and detection means comprising photoelectric cells mounted to said sides of said platform at a sufficient height to sense and detect the position and number of axles or outside tires of said truck and the wheelbase length of said truck between its front and rear axles;

a central processing unit comprising a computer operatively connected to said scale, said identification badge input reader and scanner, and said optical sensing and detection means for determining the maximum allowable loaded weight of said truck under state law and regulations based upon said number of axles or outside tires of said truck and its wheelbase length and for comparing said maximum allowable loaded weight with said actual gross weight of said truck; and

printing means operatively connected to said central processing unit for printing and dispensing a bill of lading if said actual gross weight is less than said maximum allowable loaded weight, said bill of lading containing and indicating said actual gross weight, the name of said truck driver, the type of product loaded into said truck, the specific gravity of said product, and said maximum allowable loaded weight.

4,605,082

COMBINED WEIGHING APPARATUS

Yoshikazu Matsuura, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,898

Claims priority, application Japan, Aug. 31, 1983, 58-159478; Aug. 31, 1983, 58-159479

Int. Cl.[4] G01G *19/22, 19/52*

U.S. Cl. 177—25 **10 Claims**

1. A combined weighing apparatus comprising 6 sets of two weighing hoppers (S1, S2) . . . (S11, S12) for alternately weighing products fed thereto, and sets of three memory hoppers (M1, M2, M3) . . . (M16, M17, M18), each set of weighing hoppers corresponding to a respective set of three memory hoppers, one memory hopper of each set being supplied with weighed products from either of said weighing hoppers of a respective set, for pooling the products, and wherein combinations of weights are formed from a group of memory hoppers consisting of one hopper per each set, a combination which is within a permissible limit and is equal or nearest to a predetermined weight value is selected from said combinations of weights and selected memory hoppers used in the selected combination are fed immediately after being emptied from corresponding odd- or even-numbered weighing hoppers.

4,605,083

METHOD AND APPARATUS FOR WEIGHING MATERIAL

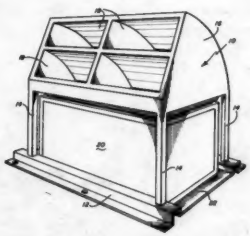
R. Langdon Wales, Lincoln, and H. W. Crowley, Newton, both of Mass., assignors to Automation, Inc., Needham, Mass.

Filed Dec. 13, 1982, Ser. No. 449,390

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.[4] G01G *13/02, 19/00*

U.S. Cl. 177—122 **16 Claims**



1. Apparatus for weighing material from multiple streams with a common scale, comprising;

a plurality of separate means for the temporary storage of a quantity of said material that is to be weighed,

common weighing means,

means for sequentially releasing said material from said respective separate means for storing to said common weighing means,

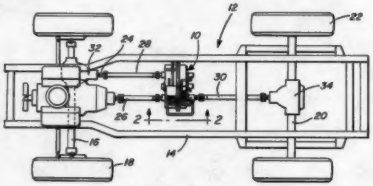
means responsive to said weighing means for sensing increments in weight for each respective release of material,

and means for totaling the respectively sensed weight increments to provide a plurality of separate counts corresponding to weight and associated with each respective means for storage.

4,605,084
CONSTANT MESH GEAR TRANSMISSION

Hendrick W. Haynes, Seattle, Wash., and Harry W. Mayer, 7414 218th St., SW., Edmonds, Wash. 98020, assignors to Harry W. Mayer, Edmonds, Wash.

Filed Oct. 20, 1983, Ser. No. 545,051
Int. Cl.[4] F16H *37/06*
U.S. Cl. 180—70.1 **18 Claims**

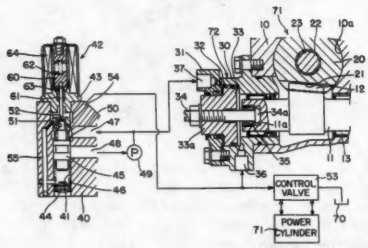


1. In combination with a vehicle having at least two drive axles, and a transfer gear assembly through which the vehicle is propelled, including a transfer gear case, a pair of driven shafts rotatably mounted in non-aligned spaced relation in the gear case, means drivingly connecting the driven shafts to the drive axles, respectively, an input shaft and means rotatably mounting said input shaft in the gear case, the improvement comprising a counter shaft rotatably mounted in the gear case in spaced relation to said driven shafts and the input shaft, countershaft gear means drivingly connecting the input shaft to the counter shaft, constant mesh gear means drivingly connected to one of the driven shafts, controllable clutch means for respectively coupling the constant mesh gear means to the input shaft, the counter shaft and the other of the driven shafts, and selective control means operatively connected to said clutch means for transmitting torque to one or both of the drive axles at two different drive ratios without interrupting propulsion of the vehicle.

4,605,085
POWER STEERING

Susumu Honaga, Aichi, and Mikio Suzuki, Hekinan, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1985, Ser. No. 724,920
Claims priority, application Japan, Apr. 23, 1984, 59-82732
Int. Cl.[4] B62D *5/06*
U.S. Cl. 180—143 **4 Claims**

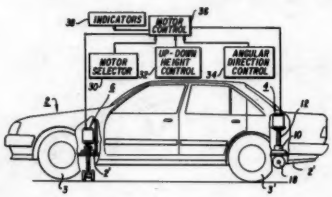


1. A power steering, comprising:
a pump driven from an engine;
a flow control valve for regularizing the discharge rate of said pump varying in response to the rotational speed of an engine;
a power cylinder;
a distribution control valve for distributing a regularized fluid pressure from said flow control valve to opposite fluid chambers of said power cylinder;
a sector gear meshed with a rack formed on the piston of said power cylinder and rotatable by operation of said power cylinder;
a sector shaft having the sector gear formed integrally therewith and displaceable in the axial direction for adjusting the preload on the meshed rack and sector gear;
a preload control cylinder for axially displacing said sector shaft, said preload control cylinder including a piston connected to said sector shaft and having different pressure receiving areas on the axially opposite ends thereof;
a first fluid passage for conducting part of the pressurized fluid, which is sent from said pump to said flow control valve, to one of fluid chambers defined in said preload control cylinder by said piston; and
a second fluid passage for conducting part of the pressurized fluid, which is fed from said flow control valve to said distribution control valve, to the other fluid chamber in said preload control cylinder.

4,605,086
LIFTING AND MANEUVERING DEVICE FOR MOTOR VEHICLES

Itshak Marom, 21 Horev Street, Haifa, Israel

Filed Oct. 26, 1984, Ser. No. 664,900
Claims priority, application Israel, Nov. 3, 1983, 70130
Int. Cl.[4] B60S *9/215*
U.S. Cl. 180—202 **20 Claims**



1. A lifting and maneuvering device for a motor vehicle having a motor vehicle frame, a vehicle motor for propelling the motor vehicle, a differential transmission, and two sets of vehicle wheels each mounted on an axle for supporting the motor vehicle on a vehicle supporting surface, comprising: a secondary wheel assembly mounted to the motor vehcile frame in proximity to one of the axles of the motor vehicle, the secondary wheel assembly including a maneuvering wheel and vertical drive means for moving the second wheel assembly back and forth between an upper retracted position and a lower operative position, in the operative position the maneuvering wheel comes in contact with the vehicle supporting surface and lifts one set of vehicle sheels off the vehicle support surface, the secondary wheel assembly further including a threaded nut fixed to the motor vehicle frame, a vertical shaft threadedly recieved on the nut and capable of support of the motor vehicle, the vertical drive means comprising a secondary motor having a stator and a rotor, the rotor coupled to the upper end of the shaft for rotating the shaft while the secondary motor is supported by the shaft for vertical movement thereon, the shaft being moved in a vertical direction by the secondary motor simultaneously with the vertical movement of the secondary motor, the secondary wheel assembly further including wheel means which include the maneuvering wheel and secondary axle means, the maneuvering wheel rotatably attached to the secondary axle means as part of the wheel means and having an axis of rotation generally prependicular to the shaft, the wheel means being fixedly mounted on the lower end of the shaft whereby rotational motion of the shaft causes the wheel means to rotate simultaneously with the shaft

thereby rotating the axis of the maneuvering wheel with the rotational motion of the shaft, the secondary wheel assembly capable of reciporcal movement between the upper retracted position and the lower operative position upon the energization of the secondary motor, wherein when the secondary wheel assembly is in the operative position operation of the vehicle motor causes the motor vehicle to rotate.

4,605,087

ALL-WHEEL DRIVE SYSTEM FOR VEHICLES

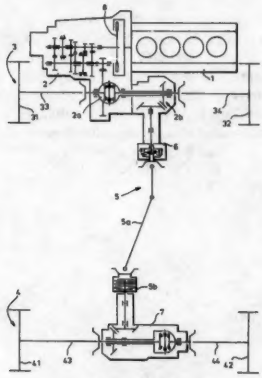
Karl Ashauer, Wolfsburg; Bernd Richter, Bokensdorf; Manfred Kalversberg, and Rudiger Schmidt, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,471

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317247

Int. Cl.[4] B60K *17/344*

U.S. Cl. 180—248 **8 Claims**



1. In an all-wheel drive system for a vehicle comprising a front axle with front wheels and a rear axle with rear wheels, the front wheels being continuously driven by a conventional live axle drive comprising a positive differential gear and the rear wheels being automatically driven with said front wheels by a drive train having viscous fluid coupling means therein, the improvement comprising at least one coupling means in said drive train responsive to the direction of a torque applied thereto to automatically interrupt said drive train so as to prevent braking effects on the front wheels from being transmitted to the rear wheels by way of the drive train.

4,605,088

MULTIDIRECTIONAL SOUND ABSORBER

Anthony R. Sickels, Dayton, Ohio, assignor to Soundfold, Inc., Dayton, Ohio

Filed Nov. 13, 1984, Ser. No. 670,242

Int. Cl.[4] E04B *1/99*

U.S. Cl. 181—30 **2 Claims**

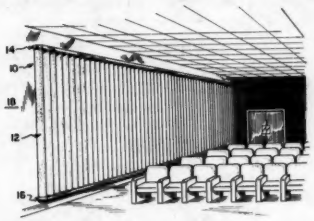
1. For use on an exterior surface of a wall, a multi-directional sound absorber comprising:

a substantially flat base including a continuous, imperforate sheet of fiber glass compressed to a relatively low density and having inner and outer surfaces;

an outer layer including a continuous, imperforate sheet of fiber glass compressed to a relatively high density and forming a plurality of channels having inner and outer faces and attached to said base such that said channels form a plurality of hollow chambers therewith;

a sheet of acoustically transparent, relatively abrasion-resistant material attached to said outer faces of said channels;

track means for enclosing upper and lower ends of said base and channels and including means for mounting said track means on an exterior of a wall, said track means having upper and lower track members, each of said track members including a one-piece blank having a floor with an end surface beveled to conform to a slope of said outer face of an end one of said channels, an elongate rear wall



attached to said floor at a first fold line, an elongate front wall attached to said floor opposite said front wall at a second fold line, a side wall attached to said front wall at a third fold line, a first, substantially triangularly-shaped tab attached to said side wall at a fourth fold line, a tap attached to an end of said side wall opposite said front wall at a fifth fold line, and first and second elongate flaps attached to said front and side walls opposite said floor and said triangularly-shaped tab at sixth and seventh fold lines, respectively.

4,605,089

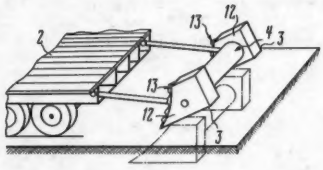
METHOD OF AND APPARATUS FOR GENERATING SHEAR SEISMIC WAVES

Jury B. Kravchenko, Kiev; Jury A. Baru; Saul G. Osyatinsky, both of Kharkov; Jury V. Timoshin, Kiev; Anatoly I. Makogon, Kharkov; Igor P. Lobas, Kiev; Kim S. Gasilovsky, Lvov; Inna Z. Livshits, and Alexei N. Besedin, both of Kharkov, all of U.S.S.R., assignors to Spetsialnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Po Pogruzhnomu Elektrooborudovaniju Dlya Burenia Skvazhin I Dobychi Nefti VNPO "Potentsial" , Kharkov, U.S.S.R.

Filed Jun. 3, 1983, Ser. No. 500,920

Int. Cl.[4] G01V *1/09*

U.S. Cl. 181—114 **12 Claims**



1. A method of generating shear seismic waves in the ground by a mobile seismic energy source, comprising a target member penetrating the ground, including the steps of:

utilizing as the target member a structure defined by a concave frontal surface and a flat lower surface both forming parts of a wedge with a cutting edge and symmetrically divergent from the cutting edge in the form of essentially flat side surfaces inclined to each other at an acute angle;

bringing said target member in contact with the ground;

moving said target member along the ground profile by a tractive force of a land vehicle;

forcing said target member into the ground to a preset depth by using a component of said tractive force of the land vehicle and dependent on the specified shape of said target member, simultaneously with said movement of said target member along the ground profile during which the net force acting on said target member is directed at an angle less than 90° to the direction of movement of the land vehicle; and

generating a force in said target member by transmitting thereto mechanical impulses in a plane generally parallel to the ground surface and essentially perpendicular to the direction of movement of said target member.

4,605,090

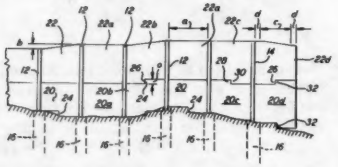
CONCRETE NOISE BARRIER

Nicholas W. Melfi, Manlius, N.Y., assignor to Concrete Pipe and Products Corp., East Syracuse, N.Y.

Filed Oct. 24, 1985, Ser. No. 791,054

Int. Cl.[4] E04H *17/00*

U.S. Cl. 181—210 **10 Claims**



1. A concrete post-and-panel noise barrier comprising a plurality of flat reinforced concrete panels each having a pair of parallel vertical side edges defining a width of the panel, a top edge, a bottom edge, and a predetermined thickness; and a plurality of reinforced concrete columns each having a pair of generally oppositely disposed longitudinal recesses each slightly wider than the thickness of said panels, with each said panel being mounted in cooperating longitudinal recesses in successive ones of said columns; and wherein at least certain ones of said panels have a step formed in one of said top and bottom edges with said one edge being generally horizontal and said step defining an offset such that one portion of said one edge adjacent said step is lower than the abutting portion of said one edge.

4,605,091

SOUND INSULATING APPARATUS

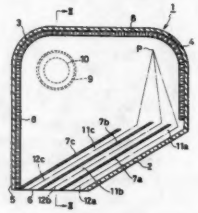
Kazuyoshi Iida; Keiichiro Mizuno, both of Yokohama; Michiyuki Yamaguchi, Fuchu, and Kazuo Kondo, Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 7, 1985, Ser. No. 742,508

Claims priority, application Japan, Jun. 21, 1984, 59-126506

Int. Cl.[4] E04F *17/04*

U.S. Cl. 181—224 **7 Claims**



1. A sound insulating apparatus for installation in a communicating means interconnecting a first space and a second space otherwise separated from one another by partition means, for reducing sound propagation through said communicating means between said first and second spaces while allowing air and gas exchange therebetween, comprising:

closed hollow container means having an outer wall for enclosing an interior thereof, said outer having an interior surface defining said interior therewithin;

a first opening in said container means for communicating said interior thereof with said first space;

sound converging means provided at said first opening in said container means for converging sound waves entering said first opening from said first space towards a predetermined convergence point within said interior of said container means;

a sound absorbing member attached to said interior surface at least at said predetermined convergence point for absorbing said converged sound waves; and

a second opening in said container means for communicating said interior thereof with said second space, said second opening being positioned away from said predetermined convergence point.

4,605,092

LARGE, HIGH R.P.M. DIESEL ENGINE EXHAUST MUFFLER

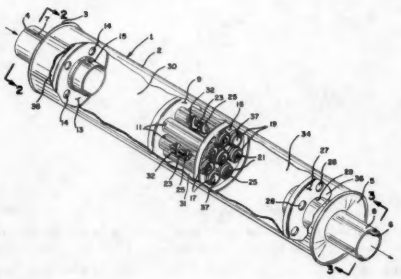
Theodore R. Harris, 14 El Patio, Orinda, Calif. 94563, and Richard T. Harris, 3127 Stanley Blvd., Lafayette, Calif. 94549

Filed Jan. 18, 1985, Ser. No. 693,005

The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.

Int. Cl.[4] F01N *1/12*

U.S. Cl. 181—280 **10 Claims**



1. An internal combustion engine muffler comprising:

a. an elongated housing having a curvilinear side wall, an inlet end wall formed with a first inlet opening, and an outlet end wall formed with a first outlet opening;

b. an inlet tube connected to said inlet end wall and communicating with said first inlet opening in said inlet end wall;

c. an outlet tube communicating with said first outlet opening in said outlet end wall;

d. a first internal reflection wall axially spaced downstream from said inlet end wall forming a close fit with said curvilinear side wall and formed with a pluralty of large tube openings;

e. a second internal reflection wall spaced between said inlet end wall and said first internal reflection wall forming a close fit with said curvilinear side wall and formed with a first edge echo orifice opening therethrough and a second inlet tube opening;

f. said inlet tube communicates with said second inlet tube opening in said second internal reflection wall;

g. a bulkhead wall axially spaced downstream from said first internal reflection wall forming a close fit with said curvilinear side wall and formed with a plurality of large tube openings axially aligned with said large tube openings in said first internal reflection wall;

h. a plurality of elongated internal large tube members extending from said first internal reflection wall to said bulkhead wall and communicating with said large tube openings in said first internal reflection wall and said bulkhead;

i. inner small tube members coaxially mounted within less than all of said large tubes forming small open ended pulse chambers;

j. helical members in each of said large tubes having an inner small tube joining each of said inner small tubes and said large tube members;

k. a third internal reflection wall axially spaced downstream from said bulkhead wall forming a close fit with said curvilinear side wall and formed with a second edge echo orifice opening therethrough and a second outlet tube opening formed in alignment with said first outlet opening is said outlet end wall;

l. said outlet tube is in communication with said second outlet tube opening in said third internal reflection wall;

m. a primary expansion chamber formed by said curvilinear side wall, said second internal reflection wall and said first internal reflection wall;

n. elongated swirl and pulse smoothing chambers formed between said small tubes and said internal large tubes and divided by said helical members;

o. a primary interference chamber formed by said curvilinear side wall, said bulkhead wall and said third internal reflection wall;

p. a first acceleration gas expansion chamber formed by said curvilinear side wall, said inlet end wall, and said second internal reflection wall;

q. a second acceleration gas expansion chamber formed by said curvilinear side wall, said third internal reflection wall and said outlet end wall;

r. said plurality of internal large tube members mounted between said first reflection member and said bulkhead member are positioned at substantially the mid-point of said housing; and

s. at least one large open ended pulse chamber formed within one of said large tubes which does not include an inner small tube and helical member.

4,605,093

DEVICE FOR ABSORPTION OF SOUND WAVES

Lennart Karlén, Stockholm, Sweden, assignor to Gullfiber Akustik AB, Billesholm, Sweden

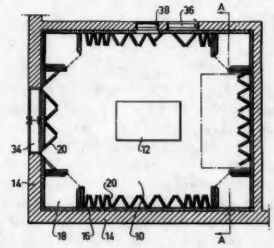
PCT No. PCT/SE84/00365, § 371 Date Jun. 27, 1985, § 102(e) Date Jun. 27, 1985, PCT Pub. No. WO85/01975, PCT Pub. Date May 9, 1985

PCT Filed Oct. 30, 1984, Ser. No. 755,378

Claims priority, application Sweden, Oct. 31, 1983, 8305972

Int. Cl.[4] E04B *1/82*

U.S. Cl. 181—295 **5 Claims**



1. A device intended for absorption of sound waves and for use as internal facing, primarily in so-called echo-free rooms, said device comprising a substrate support which consists of mineral wool plates, to which plate-shaped sound absorbents, preferably of mineral wool, are inclined relative to each other in such a way that they have a wave-like cross-section, wherein the angle between two sound absorbents placed with their edges close to each other on the substrate support is so chosen that the sound waves deriving from a measuring object are always reflected at least twice before they leave the device, and wherein the substrate support as well as two adjacent sound absorbents, which are placed on the substrate support with their edges in spaced relationship from each other, define a cavity with a gap between the sound absorbents and/or between sound absorbents and substrate support, which gap is so adapted that cavity resonance is obtained at a predetermined lower range of frequencies.

4,605,094

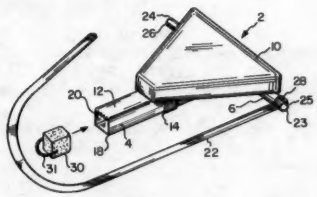
COMBINATION TREE SEAT AND ANIMAL DRAG

Richard A. Minerd, R.D. #1, Box 223, LeMont Furnace, Pa. 15456

Filed Oct. 30, 1985, Ser. No. 792,849

Int. Cl.[4] A01M *31/02*; A45F *32/26*

U.S. Cl. 182—20 **11 Claims**



1. A combination tree seat and animal drag device comprising an elongated central support having a first end and a second end and an elongated cross support attached to said first end of said central support and extending approximately transverse thereto to form a substantially T-shaped frame member, a seat member removably attached to a planar surface of said frame member, tree grip means on said second end of said central support, attachment means on said cross support and an elongated strap removably attached at each end thereof to said attachment means on said cross support, whereby said frame member may be attached to a tree by engaging said tree grip means on said central support with the outer surface of the tree and passing said strap around said tree and attaching said strap to said attachment means on said cross support.

4,605,095

VERTICAL ELONGATED CHUTE

Kenichi Koizumi, Omiya, Japan, assignor to Fujikura Rubber Ltd., Tokyo, Japan

Filed Oct. 30, 1985, Ser. No. 792,819

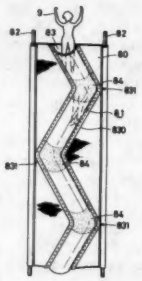
Claims priority, application Japan, Oct. 31, 1984, 59-229689; Oct. 31, 1984, 59-229690

Int. Cl.[4] A62B *1/20*

U.S. Cl. 182—48 **16 Claims**

1. In a vertical elongated chute of the type including a vertically extending main body having a high intensity of strength, said main body comprising a base cloth of which both longitudinally extending side edges are jointed to one another to build a tubular zigzag slip down passage to which a zigzag slip down passage cloth is fixedly secured, an inclined slip way jointed to the lower end of the main body and a platform engaged to the foremost end of said inclined slip away so that a person who has to leave a ship lands thereon safely, the improvement consisting in that the zigzag slip down passage cloth is provided with an expansible cloth at least at each of a plurality of bent parts along the zigzag slip down passage so that the latter is enlarged when dead weight of the descending person is

exerted to the area where said expansible cloth is attached to the zigzag slip down passage cloth, wherein expansibility of



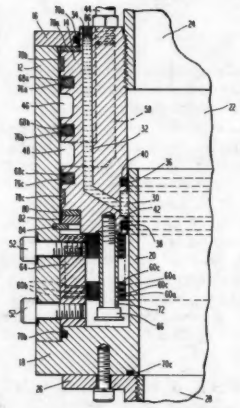
the expansible cloth is determined in the range of 200 to 250% as seen in the longitudinal direction as well as in the peripheral direction of the zigzag slip down passage.

4,605,096

LADDER BASE SWIVEL WITH A THROUGH WATER CHANNEL

Joseph I. Bishop, 45 S. Forge Mannor Dr., Phoenixville, Pa. 19460

Filed May 31, 1984, Ser. No. 615,992
Int. Cl.[4] F16L *27/08*
U.S. Cl. 182—51 **4 Claims**



1. In a ladder base swivel, the combination comprising:

(a) a bottom cover having an annular planar element and an upwardly extending water passage tube,

(b) a cylindrical body having a cylindrical water passage bore forming a continuous vertical water passage through said swivel, said body water passage bore adapted to rotatably receive said tube and having on its inner surface a first annular channel surrounding a portion of the received tube wherein said first channel contains a first annular lip seal for preventing the passage of water from said bore to the exterior of said tube,

(c) a housing having an upper portion adapted to rotatably receive said body and a lower portion adapted to secure the planar element of said cover,

(d) a second annular channel on the inner surface of said body water passage bore, said second channel containing a water displaceable oil lubricant and surrounding said tube below said first channel wherein said second channel communicates with said first lip seal,

(e) a third annular channel in said bore, said third annular channel surrounding said tube below said second channel and communicating with said second annular channel and containing a second annular lip seal adapted to prevent the passage of the oil lubricant,

(f) a continuous electric circuit through said swivel from the exterior of said housing to the exterior of said body, said electric circuit including electric contacts surrounding said tube below said third annular channel whereby said second lip seal prevents the passage of said oil lubricant from said second annular channel to said electric contacts and passage of water from said bore to said electric contacts upon failure of said first lip seal, and

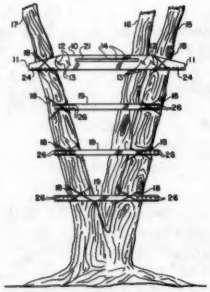
(g) an escape waterway completely surrounded by said body, said escape waterway communicating with said second channel and communicating with an opening on the exterior of said swivel independently of the relative positions of said body and said housing, said escape waterway and said second channel adapted to provide both a water escape path away from said electric contacts upon failure of said first lip seal and a reservoir for said oil lubricant.

4,605,097

PORTABLE TREE STAND

Thurman L. Maxwell, 108 Jackson St., Cookeville, Tenn. 38501

Filed May 13, 1985, Ser. No. 733,262
Int. Cl.[4] A01M *31/02*
U.S. Cl. 182—92 **4 Claims**



1. A portable treestand to be supported by three individual trees, four individual trees, a tree with three or four diverging limbs comprising an elongated main runner (**10**) having holes (**20**) located at both ends to fasten to each end an extension arm (**11**) with bolts (**12**) and secured by wing nuts (**13**), said main runner also having a slot (**21**) to receive platform boards (**14**).

4,605,098

TRUCK BUMPER STEP

David S. Leuty, 1025 S. Gay Dr., Longmont, Colo. 80501

Filed Jan. 28, 1985, Ser. No. 695,381
Int. Cl.[4] B60R *3/00*
U.S. Cl. 182—92 **2 Claims**

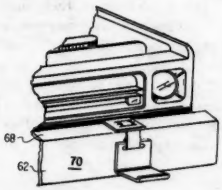
1. A bumper step adapted for removable connection to the front bumper of a motor vehicle for providing a stable platform on which the user may stand to gain access to the engine compartment of such vehicle, the bumper step comprising:

a generally flat clip member including a forwardly turned under lip portion adapted to be hooked over and behind a top surface of said bumper, said clip member further including a plurality of horizontal slots for adjustably receiving a flexible strap;

a step member, including a vertical portion and a platform

portion that is formed at a right angle to said vertical portion, said vertical portion including a horizontal slot for receiving a flexible strap; and

a length of flexible strap, one end of which is fixedly at-



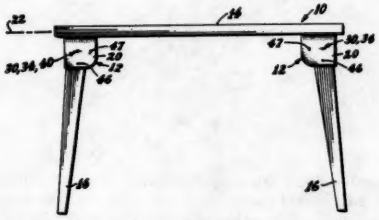
tached to said step member through the horizontal slot therein and the other end of which is adjustably placed through said plurality of horizontal slots in said clip member, whereby the height above ground of said step member may be adjusted as desired by the user.

4,605,099

BRACKET MEANS PROVIDING FULL COLLAPSIBILITY TO SAWHORSES

Wesley W. Crum, 17239 Sycamore Rd., and Gary L. Fraley, P.O. Box 946, both of Mount Vernon, Ohio 43050

Filed May 17, 1985, Ser. No. 735,129
Int. Cl.[4] B27B *21/00*; F16M *11/00*
U.S. Cl. 182—155 **24 Claims**



1. A support means for a sawhorse having a horizontal spine rail which is supported at each end by a pair of outwardly-spread legs which are connected to the respective end of the spine rail by a support bracket, the support means comprising;

a three-panelled bracket body member, having an intermediate panel and side panels, and which when viewed from above and from a point axially outwardly of the end of the spine rail when assembled thereto is of a generally U-shape,

with the intermediate panel disposed generally vertically, and transversely of the axis of the spine rail,

and with the side panels extending from the intermediate panel, generally parallel to the axis of the spine rail, and generally perpendicular to the intermediate panel, but sloping outwardly and downwardly.

and the bracket body member also has panel means which extend under the respective end of the spine rail, for supportive connection thereto;

and there are pivot means provided for pivotally interconnecting a sawhorse leg to each of the side panels,

and each leg and side panel are provided with co-operative latch means by which the sawhorse legs are latchingly held in optionally an extended position generally parallel to the respective side panel, for support of the spine rail by the sawhorse legs, and in a retracted position also generally parallel to the respective side panel but generally juxtaposed along the spine rail,

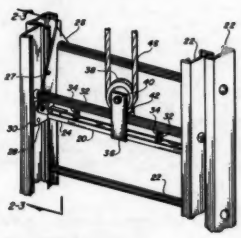
and each leg is pivotally movable about the axis of the respective pivot means between and into each position of latched engagement with the respective side panel.

4,605,100

LADDER EXTENSION LOCK

Giulio S. Inglese, Granada Hills, Calif., assignor to Uniprode, Granada Hills, Calif.

Filed Aug. 30, 1985, Ser. No. 770,971
Int. Cl.[4] E06C *7/06*
U.S. Cl. 182—213 **6 Claims**



1. A ladder extension lock for a sectionalized extendable ladder having channel side legs, and a plurality of rungs therebetween attached to interconnecting rung plates comprising:

(a) a channel shaped control bar movably positioned under one of the ladder rungs;

(b) a pair of pivot pins rigidly fastened on each end of said control bar distending outwardly therefrom for connection to said ladder;

(c) a pair of rung engaging hooks having swivel means, each rotatably contacting said pivot pin on one end and said ladder rung on the other, axially rotating when said control bar is urged upward toward said ladder rung;

(d) a pair of mounting blocks each nestingly joined within the inside of each ladder channel side leg defining a structural member receiving said hook swivel means rotatably attaching said hook to the ladder providing the hook with a pivot point in conjunction with said control bar pivot pin for converting linear movement of the bar to axial rotation of the hook when the bar is urged upward toward said ladder rung;

(e) a plurality of guide mounted compression springs abutted to said control bar and contiguous with one of the ladder rungs, drivingly urging the bar away from the rung;

(f) a channel shaped pulley yoke having a web and upstanding legs nestingly attached to said control bar abutting the web of the channel in the middle, defining an attachment member immediately above the rung of the ladder under which said bar is located;

(g) a pulley having an axle rotatably positioned between the legs of said yoke providing a sheave with a groove rim to change directions of a pulley force;

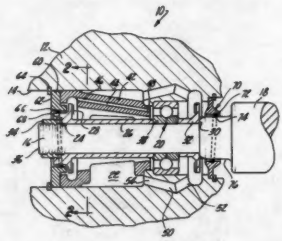
(h) a plurality of existing hoisting pulleys attached to the uppermost section of said ladder above said control bar for changing direction of a pulley force; and,

(i) a halyard loopingly positioned around said pulley and hoisting pulleys with one end attached to the ladder and the other loose, allowing an operator to hoist sections of said extendable ladder, while doing so said control bar is urged upward toward said rung against spring pressure, pivoting said hooks outwardly away from the rungs allowing the hooks to pass by while being hoisted with said hooks being returned to their locking position, as urged by said springs, when the tension on said halyard is quickly released, thus creating a fail-safe condition in the event of an accidental loosening grip on said halyard.

4,605,101
SELF-CONTAINED TURBINE ENGINE LUBRICATION SYSTEM

Dennis E. Barbeau, Lambertville, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 10, 1984, Ser. No. 679,931
Int. Cl.[4] F01M *9/10*
U.S. Cl. 184—6.11 **9 Claims**



1. A self contained lubrication system for a turbine engine, said turbine engine having a support housing and a drive shaft rotatably mounted to the support housing by a bearing assembly, said lubrication system comprising:

a first seal assembly extending between said shaft and said housing at a position axially spaced from one side of the bearing assembly;

a second seal assembly extending between said shaft and said housing at a position axially spaced from the other side of said bearing assembly;

a sump chamber adapted to contain a lubricant formed in said housing between said seal assemblies; and

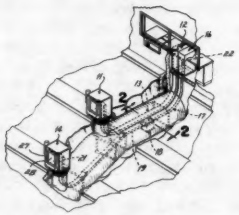
means contained in said sump chamber for pumping lubricant contained in said sump chamber through said bearing assembly during rotation of said shaft, said pumping means having a radial outer periphery;

wherein each seal assembly comprises a resilient O-ring sandwiched between a stationary portion of said housing and a rotating portion of said shaft and wherein said O-rings are spaced radially inwardly from said outer periphery of said lubricant pumping means such that said pumping means pumps fluid away from said O-rings.

4,605,102
TRANSPORTATION SYSTEM HAVING MULTIPLE DIRECTION CARGO CARRIER DOOR OPENER

Robert E. Morano, Ringwood; Victor J. Vogel, Oak Ridge, and Peter Pawchak, Randolph, all of N.J., assignors to American Standard Inc., New York, N.Y.

Filed Jun. 20, 1984, Ser. No. 622,704
Int. Cl.[4] B61D *19/02;* **B61B** *1/00*
U.S. Cl. 186—37 **20 Claims**



1. A transportation system for transporting cargo comprising:

a track;

a car on the track which includes a portion defining a cargo container;

means for driving the car along the track;

a door on the car movable between a container-closed position in which access to the cargo container is restricted and any of a plurality of alternative container-open positions in which access to the cargo container is permitted;

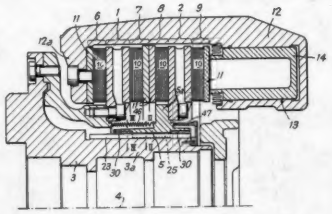
means for sensing the orientation of the car; and

means on the car, coupled to the means for sensing the orientation of the car, for selectively moving the door from the container-closed position to one of the container-open positions, said one of the container-open positions being selected in dependence upon the orientation of the car.

4,605,103
MULTI-DISC BRAKE

Jean-Jacques Carré, Le Raincy, and Ghislain Escarabajal, Meaux, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jun. 21, 1984, Ser. No. 623,041
Claims priority, application France, Jun. 30, 1983, 83 10917
Int. Cl.[4] F16D *55/36*
U.S. Cl. 188—71.5 **5 Claims**

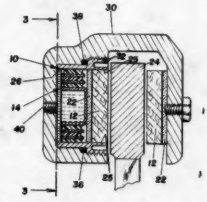


1. A multi-disc brake comprising a first rotary disc solid with a hub and a second rotary disc mounted on the hub for sliding movement parallel to an axis of the hub, the axis of the hub and axes of the discs coinciding with one another, and an assembly of friction blocks incorporating friction linings capable of engaging faces of the discs by means of an actuating device such as a hydraulic caliper jack, the linings extending only over a limited angular sector of the periphery of the discs, the second rotary disc carried by an internally splined sleeve which slides on an externally splined part of the hub, splines of the sleeve and hub engaged with one another to drive rotationally the second rotary disc with the hub, the splines having flanks shaped as gear teeth so that the flanks of two adjacent splines of the sleeve and hub are in contact only along a line substantially parallel to the axis of the hub, characterized in that the second rotary disc is mounted directly on the hub and located substantially in the middle of the sleeve, the brake including a radial-guidance arrangement for guiding the sleeve radially relative to the hub and provided at each axial end of the sleeve, the radial-guidance arrangement consisting of two continuous annular surfaces engaged with one of the sleeve and hub and in axial sliding contact with the other of the sleeve and hub, the splines of one of the sleeve and hub being interrupted by the continuous annular surfaces, each continuous annular surface consisting of a ring disposed within one of the sleeve and hub and axially slidably engaging the other of the sleeve and hub in order to maintain radial alignment of the sleeve relative to the hub, and the rings engaged slidably by a discontinuous annular surface comprised of tips of splines of the other of the sleeve and hub.

4,605,104
ACTUATOR DEVICE

Arnold R. Thompson, Brigham City, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Continuation of Ser. No. 387,898, Jun. 14, 1982, abandoned. This application Jun. 17, 1985, Ser. No. 745,821
Int. Cl.[4] F16D *55/224, 55/228, 65/20*
U.S. Cl. 188—72.4 **6 Claims**

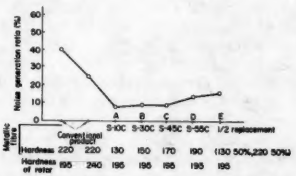


3. A disc brake including a brake caliper housing that is substantially C-shape in section and adapted to fit over a part of the periphery and sides of a brake rotor, said brake housing having a recess therein, a brake pad secured to said brake housing for engaging one face of a brake rotor, a brake pad movably carried by said brake housing in opposed relation to said first mentioned brake pad for engaging the opposed face of the brake rotor, said movably carried brake pad being carried in said recess, said recess having a closed end and an open end and having a port formed in its closed end to receive fluid from a pressure source, means for moving said movably carried brake pad to urge it towards said first mentioned brake pad comprising actuator means operatively connected to said movably carried brake pad, said actuator means having elastic properties and being operative under axial stress produced thereon by a fluid pressure applied thereto through said port to effect a displacement of said movably carried brake pad, said actuator means being comprised of rigid and resilient members bonded together in substantially parallel relation about an axis corresponding to the direction of stress and adapted to yield by flexing under said stress producing said displacement of said movably carried brake pad and to resist said flexing under compressive stress, and further including means for containing said bonded together members fixedly secured in said recess in static sealing relation with said movably carried brake pad.

4,605,105
BRAKE SYSTEM

Osao Ogiwara, Hanyu, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 524,215, Aug. 18, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,648
Claims priority, application Japan, Sep. 3, 1982, 57-153750
Int. Cl.[4] F16D *69/02*
U.S. Cl. 188—251 M **5 Claims**

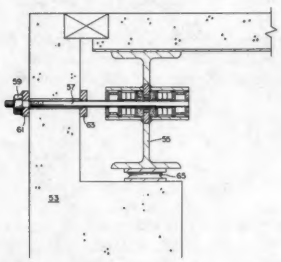


1. In a brake system comprising a semi-metallic friction material component and a braking component which frictionally contacts said friction material component during braking action, the semi-metallic friction material containing 10–70 vol % of a metallic fiber and/or a metallic powder, conventional additives and a thermosetting resin binder, the improvement wherein at least 50% of the metallic fiber and/or the metallic powder in said friction material has a Vickers hardness of Hv 100 to Hv 170 and is selected from the group consisting of steel wool and sponge iron powder, said braking component is cast iron having a Vickers hardness greater than Hv 170, and the Vickers hardness of said steel wool and sponge iron powder is at least Hv 5 lower than the Vickers hardness of said braking component.

4,605,106
DISPLACEMENT CONTROL DEVICE

Edward R. Fyfe, Burlington, and William M. Slater, Toronto, both of Canada, assignors to Elastometal Limited, Ontario, Canada

Filed Jan. 16, 1984, Ser. No. 571,268
Claims priority, application Canada, Jan. 17, 1983, 419576
Int. Cl.[4] E02D *27/34*
U.S. Cl. 188—374 **3 Claims**



1. A displacement control device for limiting the magnitude of movement between two relatively movable bodies comprising:

a first member for securement to one body and a second member for securement to the other body, the first member including a cylinder having located therein a plurality of viscoelastic discs arranged on a common axis, constituting a set of discs having first and second ends;

first and second solid discs located at first and second ends of said set of viscoelastic discs respectively,

a perforated plate located below said second solid disc and fixed to said cylinder and a viscous material disposed between said perforated plate and said second disc; wherein upon pressure being exerted upon said first disc, the viscoelastic discs compress and limit relative movement between said first member and said second member, and upon excess movement of said first disc toward said second disc due to an increase of pressure exerted upon said first disc, said second disc is moved toward said perforted plate and extrudes the viscous material through the perforation in said perforated plate thereby absorbing some of the energy causing the relative movement.

4,605,107
SLIP CLUTCH WITH SLIP DETECTOR AND ELECTRICAL DISCONNECT

William M. Hallidy, Glendora, and Donald P. Shutt, Long Beach, both of Calif., assignors to Western Gear Corporation, Lynwood, Calif.

Filed Dec. 12, 1983, Ser. No. 560,216
Int. Cl.[4] F16D *7/00*
U.S. Cl. 192—0.02 R **8 Claims**

1. An apparatus for protecting against excessive mechanical loads in rotating machinery, said device comprising:

a fast-acting slip clutch means having an input shaft for

connection to a drive motor and an output shaft for connection to a mechanical load, said slip clutch means being operative for mechanically limiting the torque that can be transmitted to the load by permitting slippage between said shafts without disengaging said output shaft from said input shaft;

slip-sensing means for electronically detecting differences in speed between said input and output shafts and for generating a control signal in response to a predetermined relationship between said input and output shaft speeds; and

automatic protective means, responsive to said control signal, for disconnecting power to said drive motor after a predetermined degree of slippage bewteen said input and output shafts has continued for a predetermined time period.

4,605,108

DEVICE FOR RELEASING A ROTATIONAL-LOCKING ACTUATING MEMBER

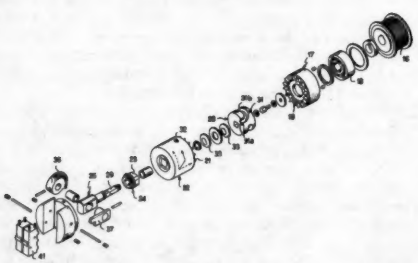
Bernard Monot, Aubervilliers, France, assignor to Faiveley Entreprises, Saint Ouen, France

Filed Apr. 12, 1983, Ser. No. 484,418

Claims priority, application France, Apr. 21, 1982, 82 06817

Int. Cl.[4] E05C *15/02*

U.S. Cl. 192—0.02 R **7 Claims**



1. An unlocking device for releasing a rotationally-locking actuating member, comprising a nut (5) mounted on an endless screw (4) connected to a motor (11), said unlocking device comprising a freewheel (18) connected to said endless screw (4) and positioned relatively thereto for driving said endless screw (4) when said freewheel (18) is itself driven according to a driving movement in an unlocking direction with respect to said endless screw (4), said freewheel (18) being connected to a first clutch disk (17) of a clutch device comprising two clutch disks, a second clutch disk (22) of said clutch device being connected to a manual control member (36) through a cam system (28, 32) in order to subject said second clutch disk (22) to a movement having a translational motion component and a rotational motion component upon actuation of said manual control member.

4,605,109

TOTALLY SYNCHRONIZED MANUAL TRANSMISSION UNIT FOR USE IN A VEHICLE

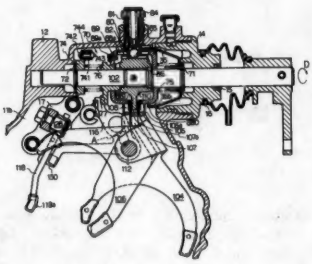
Hisashi Fukuchi; Masayuki Shibuya, and Yasuie Takahashi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 27, 1984, Ser. No. 625,129

Claims priority, application Japan, Jul. 2, 1983, 58-120749

Int. Cl.[1] B60K *41/26;* G05G *5/10, 9/12*

U.S. Cl. 192—4 C **15 Claims**



1. A gear-shift mechanism for a manual transmission unit for use in a motor vehicle, comprising:

a housing assembly;

an input shaft for connection to an engine;

an output shaft supported in a parallel relationship to the input shaft within the housing assembly;

a forward input gear integrally attached to the input shaft;

a forward output gear mounted on the output shaft and constantly meshing with the forward input gear;

synchronizing means which are slidably mounted on one of the input and output shafts and rotatable therewith;

first actuating means for shifting the synchronizing means toward or away from one of the forward input or output gears;

a reverse input gear integral with the input shaft;

an idler shaft supported in a parallel relationship with the input and output shafts within the housing assembly;

a reverse sliding gear mounted on the idler shaft;

a reverse output gear mounted on the output shaft;

second actuating means for shifting the reverse sliding gear into meshing engagement with the reverse input and output gears;

a manual shift lever for changing gearing ratios between the input shaft and the output shaft;

a shift-and-select shaft supported in a parallel relationship with the input and output shafts within the housing assembly and operatively connected to the manual shift lever;

a fork shaft slidably supported in a parallel relationship with the idler shaft within the housing assembly and operatively connected to the manual shift lever for being selectively shifted by the operation between its neutral, forward and reverse positions;

a detent mechanism mounted in the housing assembly to retain selectively the fork shaft in its neutral or shifted positions when subjected to a resilient load acting thereon, the detent mechanism comprising a first holder member and a second holder member, the first holder member being slidable on the shift-and-select shaft and rotatable relative to the housing assembly, rotation of the first holder member resulting in the movement of said synchronizing means, the first holder member having a first projection, a slot for permitting the rotation of the first holder member when shifting into reverse speed and a pawl which prevents a double shift in association with the first actuating means, the pawl including a means for retaining one of the synchronizing means associated with the reverse gear in its neutral position when the manual shift

lever is shifted to a reverse speed, the second holder member having an engagement member which selectively engages with the first holder member, corresponding to the retained neutral position of one of the synchronizing means; and

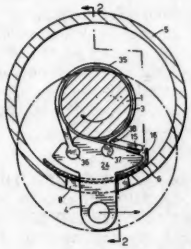
rotating means rotated by the manual shift lever, having a second projection engaged with the first projection of the first holder member when the first holder member slides upon shifting into reverse speed, rotation of the manual shift lever resulting in the rotation of the rotating means because of the engagement between the first projection and the second projection, this resulting in the effect of the synchronizing means for a forward speed, whereby when the manual shift lever is shifted to a reverse speed, the synchronizing means for a forward speed are effected to stop the rotation of the input shaft by inertia and the synchronizing means associated with the reverse gear is maintained to its neutral position by the engagement member of the second holder member.

4,605,110

BRAKE ACTUATOR FOR BICYCLES AND THE LIKE

Winnett Boyd, 107 Victoria Place, Bobcaygeon, Ontario, Canada (K0M 1A0)

Filed May 6, 1985, Ser. No. 730,993
Int. Cl.[4] B60K *41/26*; F16D *41/34*
U.S. Cl. 192—5 **4 Claims**



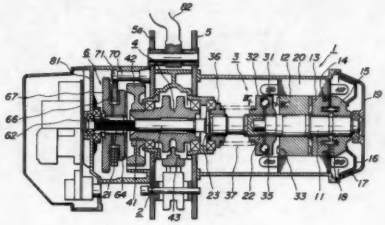
1. A device for operating a brake of a pedal operated vehicle, comprising a brake operating lever projecting through an opening in a pedal crankshaft housing of the vehicle, and two oppositely wound spring coils connected at a bight engaging the lever, and concentrically surrounding and frictionally engaging a pedal crankshaft within the housing, with an inner end of the lever engaging the circumference of the crankshaft, wherein a flexible strap is provided extending in a loop from the lever, around the crankshaft and back to the lever, a wrapping surface is formed on the inner end of the lever whereby tilting of the lever in one direction relative to the periphery of the crankshaft causes the strap to wrap onto the wrapping surface and reduce the length of the loop so that the strap grips the crankshaft and locks the lever to the latter, the bight engaging the lever adjacent its inner end so that the spring coils extend from the bight in the direction of crankshaft motion associated with back pedalling, and said bight provides a fulcrum for tilting of the lever relative to the crankshaft in said one direction such that the strap grips the crankshaft and locks the lever to the latter.

4,605,111

HOIST

Masayuki Ohno, Tokyo, and Kazuo Maeda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Kito, Kawasaki, Japan

Filed Aug. 19, 1983, Ser. No. 524,715
Claims priority, application Japan, Aug. 25, 1982, 57-146213
Int. Cl.[4] F16D *15/00, 67/02*
U.S. Cl. 192—16 **8 Claims**



1. A hoist including a shaft driven by external force, a driving shaft connected to said shaft, a reduction gear train for transmitting rotation of said driving shaft to a load sheave, a mechanical brake assembly in said reduction gear train, and an overload safety device having a clutch mechanism capable of transmitting torque larger in driving said load sheave in a winding-off direction than that in a winding-up direction, said clutch mechanism comprising a disc-like driving member, a disc-like driven member, surfaces of these members facing to each other being formed with a plurality of recesses which are arranged in circles on the surfaces of these members and in opposition to each other, slide elements each accommodated in each set of said opposite recesses respectively formed in the these members, and resilient urging means for urging said slide elements between said driving and driven members, any one of each set of the recesses having a gentle slope surface facilitating each said slide element to ride thereon and slip when driving said load sheave in the winding-up direction, and said clutch mechanism axially arranged directly between said shaft driven by external force and said driving shaft connected to said shaft.

4,605,112

CONTROL SYSTEM FOR AN INFINITELY VARIABLE TRANSMISSION WITH AN ELECTROMAGNETIC POWDER CLUTCH

Toshio Takano, Hamuramachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan and Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Oct. 4, 1983, Ser. No. 538,880
Claims priority, application Japan, Oct. 9, 1982, 57-178022
Int. Cl.[4] B60K *41/02, 41/28*
U.S. Cl. 192—0.033 **6 Claims**

1. A system for controlling an infinitely variable transmission for a vehicle which comprises a driving pulley, a driven pulley and a belt engaged with both pulleys, the transmission ratio thereof being automatically varied by changing effective diameters of both pulleys with said belt, comprising

an electromagnetic clutch for coupling a crankshaft of an engine with an input shaft of the transmission;

said electromagnetic clutch having a coil for engaging the clutch by current flowing through said coil partially and completely, respectively;

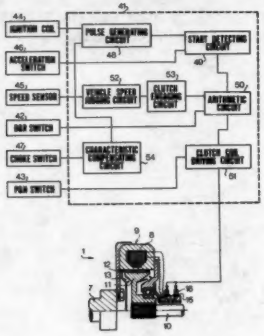
first circuit means for producing an engine speed signal;

second circuit means for producing a vehicle speed signal dependent on vehicle speed;

arithmetic circuit means for controlling the clutch current flowing through said coil in dependency on said engine speed signal and said vehicle speed signal;

said arithmetic circuit means is for cutting off the clutch

current so as to disengage the clutch at a low vehicle speed when the engine speed has decreased to a predetermined value which is slightly higher than an engine speed at which the engine stalls at the low vehicle speed.



4,605,113

CLUTCH RELEASE, IN PARTICULAR FOR AUTOMOBILE CLUTCHES

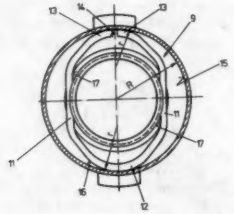
Manfred Brandenstein, Eussenheim, and Roland Haas, Hofheim, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 25, 1984, Ser. No. 603,647

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 8312805

Int. Cl.[4] F16D *23/14*

U.S. Cl. 192—98 **9 Claims**



1. A clutch release comprising a sliding sleeve having a radially outwardly directed flange, a clutch release bearing having a stationary bearing ring with a radially inwardly directed flange which slidably abuts said flange of said sliding sleeve, and a generally oval-shaped spring ring having a pair of mutually parallel guiding surfaces and arranged between said stationary bearing ring and said sliding sleeve, said stationary bearing ring being rotatable with respect to said sliding sleeve in the circumferential direction within fixed limits and to move in a radial direction along said guiding surfaces by overcoming a radially acting frictional force between said flanges, said spring ring abutting the bore surface of said stationary ring at two diametrically opposed positions and engaging two diametrically opposed positions in an annular groove of said sliding sleeve that are displaced 90° from said two positions of said bore surface, the contact points for said spring ring on said bore surface of said stationary bearing ring and the contact points in said annular groove of said sliding sleeve being mutually displaced in the axial direction, said spring ring having a substantially bow-shaped profile.

4,605,114

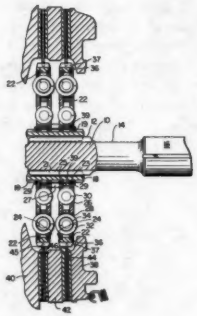
VIBRATION DAMPING CLUTCH AND PINION ASSEMBLY

Oliver R. Goetz, Greencastle, Pa.; Richard D. Schnurr, Williamsport, and Victor Kronstadt, Hagerstown, both of Md., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Jan. 18, 1985, Ser. No. 692,496

Int. Cl.[4] F16D *3/14, 3/66*

U.S. Cl. 192—106.2 **8 Claims**



1. A clutch and pinion vibration-damping assembly for use with a drive train of a heavy-duty, high torque rise, slow speed engine and producing a very low spring rate, the assembly comprising; a clutch having a driving member including a disk and a driven member including a hub, a very low spring rate vibration damper connecting the clutch driving member to the clutch-driven member, the vibration damper including multiple circumferential rows of springs constituting the sole normal drive connection between the disk and the hub, in combination with a pinion output shaft drivingly connected to the clutch-driven member through spline connecting means, the output shaft having a necked-down portion so that the spring rate of the multiple spring row vibration damper and the necked-down output shaft take the resonant speed of the drive train lower than the operating speed of the engine.

4,605,115

DEVICE DESIGNED TO MOVE A SECTION BEING MACHINED PAST MACHINING MEANS AND IN THE LONG DIRECTION OF THE SECTION

Michel Genans, Grenoble, France, assignor to Dufieux and Societe Nationale des Chemins de fer Francais, both of Paris, France

Filed Jan. 30, 1984, Ser. No. 575,129

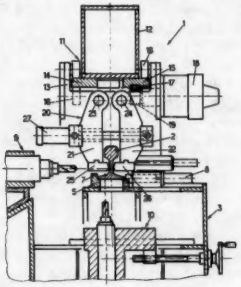
Claims priority, application France, Feb. 1, 1983, 83 01567

Int. Cl.[4] B65G *43/00, 47/90;* **B26D** *5/20;* **B23Q** *5/50*

U.S. Cl. 198—341 **6 Claims**

1. A device designed to move a section being machined past machining means along a path in a longitudinal direction with respect to the section so that the section can be positioned with respect to the machining means, said section having a front end, said device comprising translation means including a carriage and means for moving said carriage in said longitudinal direction; a clamp mounted on said carriage, said clamp having arms for gripping the section transversely; clamp actuating means connected to said clamp for causing said clamp to grip or release the section; a stop also mounted on said carriage; stop actuating means connected to the stop for moving the stop on the carriage between a first position where the stop is located in the path of the section and a second position where the stop is retracted from the path of the section, said clamp and said stop moving simultaneously with said carriage so that, when said stop is in its first position and located forwardly of the section, the front end of the section is moveable

in a forward direction into contact with the stop while the section lies between the arms of said clamp at a position where it is grippable by the clamp, said device being operable when said stop is in its second position so that said clamp can grip the



section at any position along the length of the section away from the front end of the section, said carriage moving the section to machining positions located at preset distances from the front end of the section regardless of the length of the section.

4,605,116

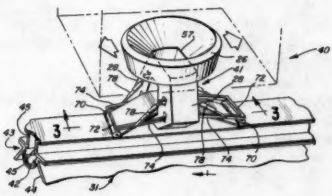
CONVEYOR SYSTEM USED WITH APPARATUS FOR UNLOADING COMMINUTED MATERIALS

Charles P. Miller, McHenry, Ill., assignor to Miller Formless Co., Inc., McHenry, Ill.

Continuation-in-part of Ser. No. 414,383, Sep. 2, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,284

Int. Cl.[4] B65G *47/44*

U.S. Cl. 198—364 **13 Claims**



1. Enclosed conveyor apparatus for receiving comminuted material therealong and confining such materials therein while conveying the material, said apparatus comprising: an elongate housing having sidewall portions defining an elongated opening for receiving such materials therethrough; conveyor means disposed within said housing and moving said material longitudinally through said housing; discharge guide means disposed over said opening and movable therealong for discharging such material into said housing at any position along said opening; flexible cover means normally closing said opening and being selectively displaceable by said discharge guide means as said guide means moves along said opening permitting discharge of such material into said housing through said guide means and opening at any such position while maintaining a substantially dust-tight cover over said opening; said discharge guide means having shroud means overlying said opening and separating said cover means from said housing while maintaining an effective seal of said housing, said shroud means including sidewalls extending in overlapping spaced relation with the sidewalls of said elongate housing, and yieldable sealing means providing sliding seals between said overlapping sidewalls and said sidewall portions of said housing for providing a dust-tight seal between said discharge guide means and said housing as said discharge guide means is moved therealong.

4,605,117

CONVEYING ROD-LIKE ARTICLES

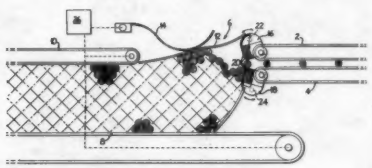
Frank Heybourn, Milton Keynes, England, assignor to Molins, Limited, Great Britain

Filed Aug. 4, 1981, Ser. No. 289,838

Claims priority, application United Kingdom, Aug. 8, 1980, 8025874

Int. Cl.[4] B65G *47/22*

U.S. Cl. 198—493 **13 Claims**



1. Apparatus for conveying rod-like articles, comprising means including a first conveyor for conveying a stream of articles in a direction transverse to the lengths of the articles at a first speed, means including a second conveyor for conveying a stream of articles in a direction transverse to the lengths of the articles at a second speed which is less than the first speed, the height of the stream on said second conveyor being greater than that on said first conveyor, a transfer region disposed between said first and second conveyors in which articles are transferred from the first conveyor towards the second conveyor, and means for directing an air flow to retard articles from said first conveyor in said transfer region as they move towards the second conveyor.

4,605,118

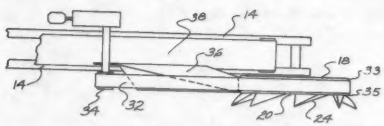
RECLAIMING DEVICE

Richard G. Kotler, 10 Bevington Rd., Pittsburgh, Pa. 15221

Filed Feb. 7, 1985, Ser. No. 699,209

Int. Cl.[4] B65G *17/36*

U.S. Cl. 198—509 **5 Claims**



1. A reclaiming device comprising;

a. a reclaiming wheel comprising an axle, a first annular member mounted on the axle, a second annular member mounted on the axle spaced apart from the first annular member and having a plurality of openings therein, and scoop means attached to the second annular member adjacent to at least one of said openings, said scoop means being configured to direct material to be reclaimed through the adjacent opening into the space between the first annular member and the second annular member;

b. a flexible belt having one edge which engages the first annular member and a second edge which engages the second annular member around a part of the periphery of the wheel; and

c. means for rotating the wheel about the axle at a speed sufficient for centrifugal force to hold the material that is to be reclaimed by the device against the segment of the

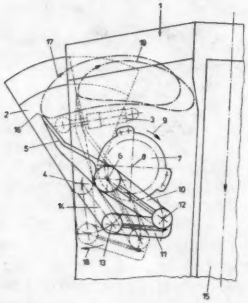
flexible belt whose edges are engaged by the annular members.

4,605,119

DRIVE ARRANGEMENT FOR THE LOADING ARMS OF A LOADING RAMP FOR HEADING MACHINES OR LONGWALL SHEARING MACHINES

Josef Keuschnigg, Ehrenhausen, and Arnulf Kissich, Zeltweg, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Dec. 21, 1983, Ser. No. 563,984
Claims priority, application Austria, Dec. 23, 1982, 4672/82
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.[4] B65G *65/02*
U.S. Cl. 198—514 **8 Claims**



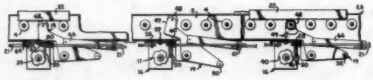
1. Drive arrangement for the loading arms of a loading ramp for heading machines or longwall shearing machines including a loading ramp, a pivotally mounted laterally extendible member for increasing the surface area of said loading ramp, the drive arrangement comprising a rotary disc pivotally supporting said loading arm in an off-center position, a guide arm fixed to the loading arm and extending from the vicinity of the pivotal support on the rotary disc, a steering lever having one end pivotally connected to the guide arm, said steering arm further connected at its opposite end to said laterally extendible member, the drive arrangement being such that rotational movement of the rotary disc about a fixed axis produces an orbital path in the loading arm and pivotal movement of said laterally extendible member varies the location of said orbital path of the loading arms.

4,605,120

SHAFT DRIVEN ACCUMULATION CONVEYOR ARRANGEMENT

Leendert A. Vanderlinde, Kansas City, Mo., and Byron T. Collier, Overland Park, Kans., assignors to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Nov. 29, 1983, Ser. No. 555,948
Int. Cl.[4] B65G *13/06*
U.S. Cl. 198—781 **10 Claims**



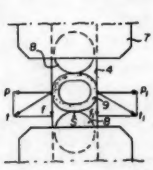
1. An accumulation conveyor arrangement comprising:
(a) an elongated roller conveyor including a conveyor frame with a plurality of rollers supported thereon;
(b) a downstream accumulation zone having a downstream roller;
(c) an upstream accumulation zone having an upstream roller;
(d) drive means;
(e) upstream and downstream clutch means each operably connecting said drive means and a respective roller, each said clutch means having a clutch control member adapted for disengaging said clutch means when immobilized, each said clutch control member having engagement means;
(f) upstream and downstream stop pawl means each slidable between a stop position engaging a respective clutch control member engagement means for immobilizing said clutch control member and a drive position disengaged from said engagement means;
(g) upstream and downstream article sensors each positioned in a respective accumulation zone and adapted for engagement by an article on said roller;
(h) upstream and downstream pawl control rods each interconnecting a respective pawl means and article sensor;
(i) said upstream pawl control rod having downstream abutment means engaging said downstream pawl means whereby said downstream pawl means is adapted to move said downstream pawl control rod upon movement of said downstream pawl means to its stop position;
(j) said downstream pawl control rod having an upstream end with upstream abutment means, said upstream abutment means being selectively disengaged from said upstream pawl means with said downstream pawl means in a stop position whereby said upstream pawl means is adapted to move to its stop position upon engagement of said upstream sensor by an article on said rollers; and
(k) said downstream pawl means being held in the drive position thereof by said downstream abutment until said downstream sensor is engaged by an article on said rollers; and
(l) biasing means engaging said upstream pawl means, said biasing means adapted to urge said upstream pawl means to its stop position.

4,605,121

ARRESTING BUFFER FOR OBJECTS ON CONVEYORS

Mats E. Wahren, Vadstena, Sweden, assignor to EWAB Ejvin Wahren AB, Vadstena, Sweden

Filed Jan. 16, 1985, Ser. No. 692,353
Claims priority, application Sweden, Nov. 9, 1984, 8402948
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—803.01 **11 Claims**



1. A braking system for a conveyor for objects conveyed by the conveyor to and stopped at assembly or processing stations for a work performing operation on the objects, said conveyor including a continuously moving conveying means, the movement of which is guided in a trough defined by parallel side walls, said braking system comprising support block means supporting the objects for movement on the conveying means, and elastic ring means freely disposed between adjacent support block means for gliding movement of the ring means on the conveying means, said ring means being compressed in the conveying direction of said objects by the support block associated with the trailing object when the trailing object reaches the station whereat the object to be worked on is stopped, said elastic ring means being laterally expanded from a circular into

an oval form for functionally engaging said side walls and thereby braking the movement of the trailing object to minimize its impact on the object being worked on.

4,605,122

SCRAPER CHAIN CONVEYOR

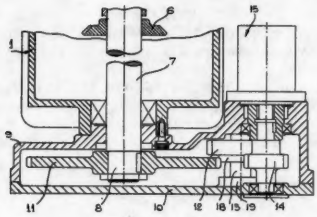
Ronald A. Biddle, St. John's, England, assignor to Dowty Meco Limited, Worcester, England

Filed Nov. 6, 1984, Ser. No. 668,756

Claims priority, application United Kingdom, Nov. 22, 1983, 8331129; Mar. 16, 1984, 8406979

Int. Cl.[4] B65G *23/06*

U.S. Cl. 198—834 **8 Claims**



1. A conveyor-chain-drive gear box and an auxiliary drive unit therefor, the gear-box comprising:

an input shaft;

an output shaft;

a side wall having an aperture therein;

a further shaft extending through said aperture and having an end portion outside the gear-box;

a bevel wheel carried by the further shaft within the gear-box;

an auxiliary drive unit having a housing detachably secured to said side wall; the auxiliary drive unit further including:

a drive pinion removably secured to the end portion of the further shaft;

an auxiliary hydraulic motor supported by the housing;

a driving pinion connected to the auxiliary motor;

an idler gear rotatably supported by the housing by means of a splined shaft and continuously in mesh with the driving pinion;

the arrangement being such that the idler gear is movable from a position in which it is out of meshing engagement with the driven pinion to an operative position in which it is in meshing engagement with the driven pinion and that the idler gear is further movable into a position in which it is locked against rotation by engagement with part of the housing while remaining in meshing engagement with both the driving pinion and the driven pinion.

4,605,123

INFUSION PACKAGE

Richard W. Goodrum, Richmond; Thomas E. Bechtold, and Albert A. Klimek, both of Midlothian, all of Va., assignors to Ethyl Corporation, Richmond, Va.

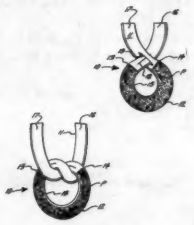
Continuation of Ser. No. 561,824, Dec. 15, 1983, abandoned. This application May 24, 1985, Ser. No. 737,460

Int. Cl.[4] B65B *29/04*

U.S. Cl. 206—0.5 **18 Claims**

1. An infusion package for particulated or finely ground products consisting essentially of a tube of perforated thermoplastic film having a central product containing portion, a product in said central product containing portion, an elongated flattened end portion on each end, said ends being oppositely located ends, each of said flattened end portions of said central product containing portion being sealedly separated from said central product containing portion, said flattened end portions being sufficiently elongated that they may be interwoven or knotted together, whereby when so interwoven or knotted together a flow through type of package with an integrated handle thereon is formed, allowing a majority of said central product containing portion to be suspended below the handle formed by said flattened end portions, said product containing package having sufficient wet strength or stability that it may be compressed after liquid infusion without destruction of the package, and said product containing package being free of any extraneous materials such as staples, strings, tabs, tags, or the like.

4. An infusion package for particulated or finely ground products consisting essentially of a tube or perforated thermoplastic film having a central product containing portion and an elongated flattened end portion on each end thereof, said ends being oppositely located ends, each of said flattened end portions being sealedly separated from said central product containing portion, said flattened end portions being sufficiently elongated that they may be interwoven or knotted together, whereby when so interwoven or knotted together a flow through type of package with an integrated handle thereon is formed, allowing a majority of said central product containing portion to be suspended below, at least one of said flattened end portions having an elongated slot or opening therein which enables one flattened end portion to be inserted through the other flattened end portion and thereby form the flow through type of bag with an integrated handle thereon, and said thermoplastic film having a multiplicity of minute uniform holes or openings therein each of which is sufficiently small to inhibit migration therethrough of a particulated product contained in the central product containing portion and is sufficiently large to permit the flow of liquids therethrough.



4,605,124

DISPOSABLE COVER FOR SURGICAL LIGHT HANDLE

Dan Sandel, and Michael Hoftman, both of Northridge, Calif., assignors to Devon Industries, Inc., Los Angeles, Calif.

Filed Aug. 9, 1983, Ser. No. 521,626

Int. Cl.[4] B65D *69/00*

U.S. Cl. 206—223 **16 Claims**

3. A disposable cover for the handle of a surgical room light

fixture which is normally positioned above the operating table and handled by the surgeon during operations, said handle including a handle grip depending from a handle flange adjacent said fixture, said cover comprising:

a sterile, disposable thin walled imperivous plastics or rubber like material body including a generally hollow grip portion and a flange integral with said grip portion at an open end thereof, whereby said cover body may be fitted over said light fixture handle, and

wherein reinforcing means including a plurality of spaced ribs are provided integrally of said grip portion and flange for giving said flange and grip portion a reinforced and predetermined configuration for facilitating the fit thereof to said handle.

4,605,125

MINIATURE FLEXIBLE MAGNETIC DISK ASSEMBLY WITH MOTION LIMIT STOP

Richard N. James, 4911 Kenson Dr., San Jose, Calif. 95124, assignor to Dysan Corporation, Santa Clara, Calif.

Filed Dec. 5, 1983, Ser. No. 558,396
Int. Cl.[4] G11B *23/02*; B31B *1/14*
U.S. Cl. 206—312 **16 Claims**

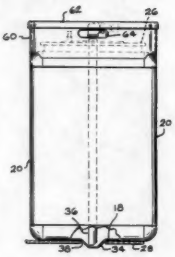
1. An enclosure for a flexible disk, said enclosure including facing major wall portions and sidewall portions defining an essentially bounded enclosure space for the disk, and motion limiting means formed in said facing major wall portions for limiting lateral migration of the disk within said enclosure space, said motion limiting means comprising a first spaced pair of inwardly extending projections formed in a first one of said facing major wall portions and a second spaced pair of inwardly extending projections formed in the other one of said facing major wall portions, said first and second pairs of projections being mutually spaced, said projections each having an outer concave surface and an inner convex surface, each said projection terminating in a curved abutment edge within said enclosure space.

4,605,126

PALLET AND TANK ASSEMBLY

James H. Goedken, and David L. Waltke, both of Beatrice, Nebr., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Oct. 1, 1984, Ser. No. 656,575
Int. Cl.[4] B65D *19/00*
U.S. Cl. 206—386 **1 Claim**



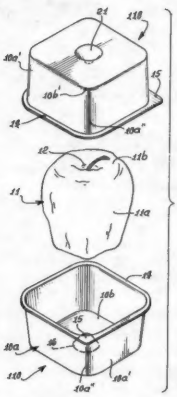
1. A multiple tank and pallet assembly comprising a rectangular pallet having short upstanding side and end walls and a bottom wall, a rectangular cluster of rectangular tanks supported on said pallet bottom wall within the boundaries defined by said side and end walls, each of said tanks having upright rigid side walls extending upwardly a substantial distance above said pallet side and end walls and two of which are engaged by a pair of said pallet side and end walls, said assembly being adaptable for handling as a unit and said tanks being individually removable from said assembly for individual handling, at least one of said tanks in said cluster including a top wall, a bottom wall that includes a downwardly extending formed sump, and a discharge conduit extending downwardly from the top wall into said sump, said pallet bottom wall including an opening through which said formed sump extends to enable said tank bottom wall to rest on said pallet bottom wall, said tank bottom wall around said formed sump being flat and said pallet bottom wall being flat.

4,605,127

FRESH FRUIT PACKAGING

Robert O. Magnussen, Jr., 20442 Lake Canyon Dr., Walnut, Calif. 91789

Continuation-in-part of Ser. No. 698,119, Feb. 4, 1985, Pat. No. 4,556,147. This application Apr. 25, 1985, Ser. No. 727,232
Int. Cl.[4] B65D *77/00*
U.S. Cl. 206—525 **10 Claims**



1. In a package for fresh fruit characterized as having a lower surface forming an upward, reentrant recess, the combination comprising

(a) upper and lower container sections to receive said fruit,

(b) first locating means on the container lower section to project upwardly into said recess, thereby to position the lower extent of the fruit, limiting its sideward movement relative to the container,

(c) and second locating means on the container upper section to engage the upper extent of the fruit, thereby to position same limiting its sideward movement relative to the container,

(d) each container section being cup-shaped and having a thin side wall and thin end wall and consisting of synthetic resin, the side wall comprising four substantially flat side wall portions joined by four outwardly convex corner wall portions, all such wall portions of each section tapering to join the end wall at outwardly convex corners, the side wall portions and corner wall portions also turning outwardly to form a continuous peripheral flange, extending about a container section mouth, said flanges being joined,

(e) each flange having a projecting corner tab adapted to be grasped and pulled to tear apart the sections,

(f) said container section wall portions being sized to closely surround said fruit, in spaced relation thereto, said second

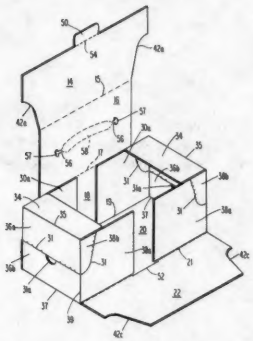
locating means having a centrally located conical projection to downwardly enter a re-entrant recess defined by the upper extent of said fruit, said projection having a downwardly domed convex terminus, and said first locating means having a centrally located, generally conical projection to upwardly enter said upwardly re-entrant recess, said projection having an upwardly domed convex terminus.

4,605,128

DISPENSING CARRIER BOX AND BLANK

Herbert W. Rieke, Indianapolis, Ind., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jul. 22, 1985, Ser. No. 757,592
Int. Cl.[4] B65D *5/54*
U.S. Cl. 206—611 **9 Claims**



1. A carrier dispenser comprising:
(a) a top wall spanning a central portion of the dispenser;
(b) a bottom wall;
(c) a pair of opposed side walls each having a lower section extending the length of the dispenser and an upper section extending along a central portion of the length of the dispenser;
(d) opposed end walls each comprising a lower section adjacent to the bottom wall, and an upper section connected to the lower section by a partially cut score line;
(e) a top flap connected to each upper end wall section by a fold line and tucked under the top wall; and
(f) each end wall having connected thereto a pair of side flaps each side flap having an upper section and a lower section connected to the upper section by a partially cut score line and connected to one of the lower end wall sections by a fold line, the side flaps being tucked inside the side walls to close the container and whereby the upper end walls, top flaps and upper side flap sections can be detached to provide an access opening into the dispenser.

4,605,129

CYLINDRICAL CONTAINER

Josef Detzel, Kempten; Franz Reitmeier, Sontheim, and Remigius Heubuch, Dietmannsried, all of Fed. Rep. of Germany, assignors to Internationale Octrooi Maatschapij "Octropa" B.V., Rotterdam, Netherlands

Filed Nov. 28, 1984, Ser. No. 675,697
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345802
Int. Cl.[4] B65D *3/26*
U.S. Cl. 206—623 **3 Claims**

1. A cylindrical container with a lid incorporating an opening for dispensing purposes and a piston-like base as well as a body wound from a flat, rectangular blank made from board or similar material that is closed along a longitudinal seam, said body having a body width wherein the two ends of the body are widened conically so as to be wider than said body width, and in these two ends the base and lid are inserted, the sides of which rest against the inside of the end of the body and each of which have a U-shaped edge which the two ends of the body engage and wherein the outer sections of the U-shaped edges are glued or sealed to the outside of the body, the portion of

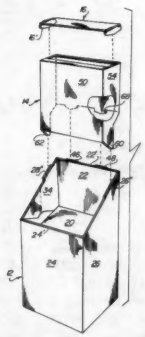
the U-shaped edge of the base which extends over the end of the body having a line of weakening which extends all the way around the edge at the end of the body so that the part of the U-shaped edge which is glued or sealed to the outside of the body may be separated around the line of weakening from the rest of the base when the base is moved inwardly towards the lid, the sides of the base being cylindrical and having ribbing on the outside which extends in rings around the sides of the base.

4,605,130

ARTICLE DISPLAY STAND WITH SELF-FEEDING HOPPER

Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust, Highland Park, Ill.

Filed Dec. 4, 1984, Ser. No. 677,978
Int. Cl.[4] A47F *5/11*
U.S. Cl. 211—59.2 **18 Claims**



1. A display stand for displaying articles for sale, comprising:
an upstanding support base portion of substantially hollow construction having a plurality of walls thereof defining a hollow interior, said support base portion being formed from one piece of material, such as corrugated board, paperboard, and the like, and having an integrally-formed article-supporting section for supporting thereon articles to be displayed; said article-supporting section being pivotally connected along a fold line to a rim portion of one of said walls, whereby said article-supporting section may

alternatively be swung into the hollow interior of said upstanding support base portion for use as a display stand upon which are supported articles to be displayed, and swung out of the interior of said upstanding support base portion to position said article-supporting section substantially parallel to said one wall to which it is connected;

said upstanding support base portion firmly and releasably holding said article-supporting section in the hollow interior of said upstanding support base portion when said section is positioned therein; whereby said article-supporting section may be fixed in the interior of said upstanding support base portion for displaying articles, and pivoted out of the interior for subsequent folding and storage;

a storage bin having a hollow interior in which are stored articles to be displayed on said article-supporting section, said storage bin being mounted substantially vertically to the upper portion of at least one of said plurality of walls for projection above the top of said upstanding support base portion; said storage bin having a lower exit mouth through which the stored articles exit and drop onto said article-supporting section;

said storage bin, said article-supporting surface, and said support base portion all being made from one piece of material.

4,605,131

UTILITY TABLE FOR ATTACHMENT TO A VERTICAL WALL, PARTICULARLY OF A SWITCH CABINET

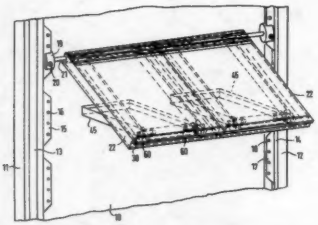
Jurgen Debus, Dietzholztal, and Claus-Dieter Ehrhardt, Springe, both of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,714

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313194

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—90 **21 Claims**



1. Utility table for attachment to a vertical wall comprising a tabletop platform **(22)** having a tabletop surface with two longitudinal **(40, 41)** and two transverse **(39, 44)** side walls directed substantially perpendicular to said tabletop surface to form a box-shaped platform **(22)**, said side walls reinforced by longitudinal supporting walls **(42)** and transverse supporting walls **(31, 43)**; and a support member **(45)** having a support member surface with two longitudinal **(46, 47)** and two transverse **(51, 52)** side walls forming a box-shaped support member, said support member side walls reinforced by longitudinal **(48)** and transverse **(49)** supporting walls; said tabletop platform provided on its underside with aligned bearing bushings **(34, 36)** adjacent one said transverse side wall **(44)** supporting at least one bearing pin **(21, 60)** engageable in bearing elements **(19)** to tiltably attach said tabletop platform to said vertical wall, with the open side of said box-shaped platform facing said vertical wall, and aligned bearing bushings **(23, 24)** in said longitudinal supporting walls **(42)** supporting at least one bearing pin **(21, 60)** pivotably attaching said supporting member to said tabletop platform in the area of the other said transverse side wall **(39)**, with the open side of said box-shaped support member facing said vertical wall, whereby said utility table is adjustable from an initial position wherein said tabletop platform is substantially parallel to said vertical wall and said supporting member is retained between said tabletop platform and said vertical wall to an inclined work position wherein said tabletop platform is inclined and said support member is perpendicular to said vertical wall, one said support member transverse side wall **(52)** projecting from said support member surface forming a support panel abutting said vertical wall, and the other said support member transverse side wall **(51)** projecting from said support member surface forming a support abutting said tabletop surface when said utility table is in said inclined work position.

4,605,132

LIFTING TOOL

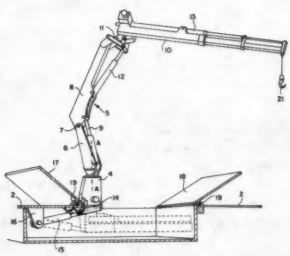
Adelbert M. D. G. van Seumeren, Mr. van Coothstraat 4, 5141 AS Waalwijk, Netherlands

Filed May 2, 1984, Ser. No. 607,227

Claims priority, application Netherlands, May 4, 1983, 8301580

Int. Cl.[4] B66C *23/42*

U.S. Cl. 212—185 **8 Claims**

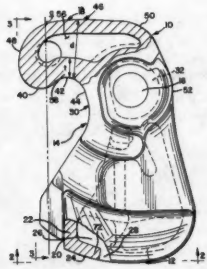


1. In a marine vessel having a deck and a shallow storage space immediately below said deck, said storage space extending laterally to define a width and longitudinally to define a length, a lifting tool adapted to be moved between a folded, stowed position within said storage space below said deck and a working position upstanding from said storage space, said lifting tool having a foot part and an upper part connected thereto about a first axis adapted to be disposed generally horizontally and longitudinally of said storage space when the lifting tool is in said stowed position, said upper part including a first section directly connected to said foot part about said first axis and extending generally in the direction of said first axis to terminate in a free end, first pivot means for pivotally connecting said foot part about a generally horizontal second axis extending laterally of said storage space and first hydraulic means for swinging said foot part about said second axis, said upper part including a second section having a length greater than the cumulative length of said foot part and said first section, second pivot means for pivotally connecting one end of said second section to said free end of said first section about a third axis allowing said second section to jackknife relative to said first section and said foot part with that end of the second section remote from said third axis being disposed laterally of said foot part within said storage space when said lifting tool is in said stowed position, and second hydraulic means for swinging said second section about said third axis.

4,605,133
COUPLER KNUCKLE

Russell G. Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Sep. 22, 1983, Ser. No. 534,814
Int. Cl.⁴ B61G *3/04*
U.S. Cl. 213—155 **1 Claim**



1. A railway vehicle coupler knuckle comprising a steel casting formed to provide an open cored rear tail portion having a locking face wall and partial rear wall reinforcing web normal to said locking face, an intermediate section including a throat wall and a pin hole, and a forward portion including a nose surface and a curved pulling face devoid of draft angles merging with said throat, and a forward surface substantially uniformly spaced from said pulling face along the full length of the knuckle,

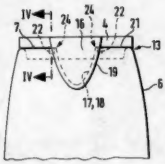
said rear tail portion being formed with a cavity defining the inner surface of said locking face wall and said reinforcing web and a lightening hole which defines the extent of the edge of said reinforcing web from said locking wall face of at least two multiples of thickness of the locking face wall,

said pin hole having end portions proximate the size of the knuckle pin and an enlarged intermediate portion spaced from said throat such that the minimum throat wall thickness is at least ⅜ the diameter of the pin.

4,605,134
REINFORCED RECESSED POURER IN INSULATING JUG

Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,034
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1984, 3412209
Int. Cl.⁴ A47J *41/00*
U.S. Cl. 215—13 A **3 Claims**

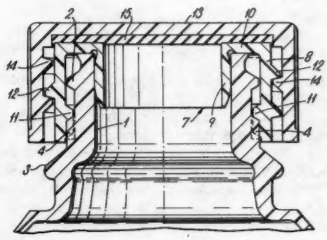


1. An insulating jug including a reinforced recessed pourer, comprising a protective housing having a housing casing, a top housing part supported on said casing, and a bottom housing part; an insulating insert being arranged within said housing casing between said housing top part and said housing bottom part, said housing top part having a handle, an opening in said housing top part sealable by a lid, said pourer being formed on said top part and extending radially outwardly through a cut-out in the housing casing of said protective housing; and cooperating extensions and recesses being arranged on both sides of said cut-out on facing surfaces of, respectively, the housing top part and the housing casing, said extensions and recesses having interlocking surfaces extending transversely of a peripheral direction of said jug.

4,605,135
SCREW-TOPPED CONTAINERS HAVING SAFETY MEANS

Geoffrey A. Ryder, 18 Meadow Green, Welwyn Garden City, Hertfordshire, England, assignor to Trevor G. Evans; Geoffrey A. Ryder and Lyn T. Evans, all of Hertfordshire, England

Filed Oct. 24, 1985, Ser. No. 791,069
Claims priority, application United Kingdom, Nov. 5, 1984, 8427911
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 215—220 **9 Claims**



1. A container in combination with child-resistant closure means, said container comprising means defining a top opening thereof and a projecting retaining ring formed integrally with said container and extending around the outside of said top opening, and said closure means comprising a collar, an external screw-thread on said collar, means rotatably mounting said collar around said opening, said collar being retained in position around said opening by said retaining ring, and a closure cap screwable onto said collar to close said top opening, said collar and said container including inter-engaging parts which cooperate with each other whereby as said cap is turned on said collar in one direction, said collar is prevented from rotating on said container to allow said cap to be screwed onto said collar and as said cap is turned in a reverse direction, said collar turns on said container to prevent said cap from being unscrewed from said collar, but said inter-engaging parts being arranged to prevent said rotation of said collar in said reverse direction to allow unscrewing of said cap from said collar by the application to said cap of an additional force, wherein said collar is U-shaped in radial section and comprises a first portion which fits around said top opening of said container and over said retaining ring, a second portion which extends over an edge portion of said container around said top opening, and a third tubular plug portion which fits within said top opening and seals against an inside surface of said container surrounding said top opening, means forming a seal between said cap and said collar when said cap is fully screwed onto said collar; wherein said inter-engaging parts comprise a series of ratchet teeth formed integrally with said container, said ratchet teeth being spaced apart from each other around said top opening and being spaced from said retaining ring on the side thereof remote from said top opening; wherein means is provided on said collar cooperating with said retaining ring whereby said retaining ring retains said collar in position and pawls are provided on said collar, said pawls cooperating with said ratchet teeth to allow said cap to be screwed onto said collar but to prevent said collar from turning on said container to allow said cap to be unscrewed from said collar only when a

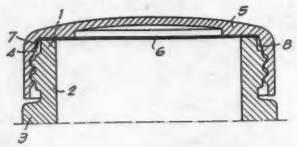
sufficient axial force, which forms said additional force, is applied to said cap to push said cap towards said top opening and hold said pawls in engagement with said teeth.

4,605,136

SEAL WITH TEAR LIP FOR CONTAINERS

Jean Debetencourt, Maulde, Belgium, assignor to Calwag S.A., Luxemburg, Luxembourg

Filed Jan. 7, 1985, Ser. No. 689,247
Claims priority, application Belgium, Jan. 9, 1984, 2/60312
Int. Cl.[4] B65D *41/62*
U.S. Cl. 215—232 **3 Claims**



1. A closure assembly for a container, said assembly comprising:

(a) a container having an annular portion that terminates in an annular end to define an opening;

(b) a seal including an aluminum foil sheet having a layer of thermally weldable material applied thereto for adherently sealing said seal to said annular end by the application of heat and pressure, said seal overlying said annular end to close said opening and including an outwardly extending tab having a length sufficient to permit the tab to be manually gripped for removal of said seal from said annular end, said tab extending outwardly away from said annular portion; and

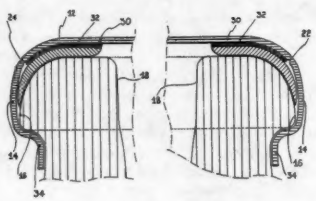
(c) a closure including a top wall in overlying relationship with said opening and a depending side wall extending from said top wall and along and over a part of the outer surface of said annular portion, said closure and annular portion including a space therebetween for completely receiving said tab in outwardly spaced relationship to said annular portion of said container.

4,605,137

BOTTLE CAP

Luigi Taragna, Rome, and Antonio Giovannelli, Anzio, both of Italy, assignors to Italcaps S.p.A., Aprilia, Italy

Filed Apr. 3, 1985, Ser. No. 719,471
Claims priority, application Italy, Apr. 12, 1984, 48025 A/84
Int. Cl.[4] B65D *41/42*
U.S. Cl. 215—254 **5 Claims**



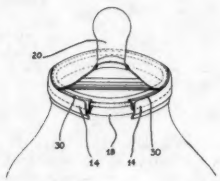
1. A bottle cap, of the tear-off type in which a central top wall which covers the top portion of the mouth of the bottle is connected to a lateral band which surrounds the opening of the neck of the bottle and is bent under the edge of the neck to grip the cap, and a tear-off tab, bounded by score lines extending from the top wall through the lateral band, and an angular sealing gasket interposed between the mouth of the bottle and the top wall and between the lateral band and the bottle mouth, said cap characterized in that said angular sealing gasket is bonded to the undersurface of the central top wall at a bond area inside the score lines, whereby, when the cap is broken by lifting the central top wall by means of the tear tab, the angular sealing gasket is lifted with the central top wall in one piece and slips off from underneath the lateral band thereby freeing or loosening the lateral band from the mouth of the bottle.

4,605,138

BOTTLE CAP

Luigi Taragna, Rome, and Antonio Giovannelli, Anzio, both of Italy, assignors to Italcaps S.p.A., Aprilia, Italy

Filed Apr. 3, 1985, Ser. No. 719,472
Claims priority, application Italy, May 16, 1984, 48205 A/84
Int. Cl.[4] B65D *41/42*
U.S. Cl. 215—254 **5 Claims**



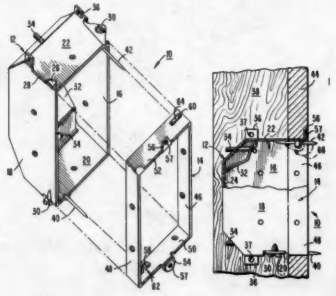
1. A bottle cap, of the tear-off type in which a central top wall which covers the top portion of the mouth of the bottle is connected to a lateral band which surrounds the opening of the neck of the bottle and is bent under the edge of the neck to grip the cap, and a tear-off tab, bounded by score lines, extends from the top wall through the lateral band and an angular sealing gasket interposed between the mouth of the bottle and the top wall and between the lateral band and the bottle mouth, said cap being characterized in that the score lines are located approximately at the boundary line between the top wall and the lateral band and said angular sealing gasket is bonded to the innermost surface of the lateral band at a bond area outside the score lines, whereby, when the cap is broken by lifting the central top wall by means of the tear-off tab, the residual lateral band appears L shaped and the angular sealing gasket is broken only at the tear tab.

4,605,139

SELF-TARGETING ELECTRICAL OUTLET BOX

Arlen M. Dacar, 41211 Mount Hope Rd., Flushing, Ohio 43977

Filed Oct. 28, 1983, Ser. No. 546,395
Int. Cl.[4] H02G *3/12*
U.S. Cl. 220—3.4 **15 Claims**



1. An electrical outlet box comprising, in combination

first and second box sections adapted to assembled together said first box section including a backwall, sidewalls extending from said backwall, and an open front, said sidewalls terminating in free edges disposed in a common plane defining said open front,

a plurality of elongated spike members rigidly mounted on said sidewalls and projecting outwardly from said open front in parallel spaced relation to one another and perpendicular to the plane of said open front,

said second box section having sidewalls and an open front and open back, said open front and back corresponding in size and shape to the open front of said first box section,

guide members on said second box section adapted to engage said spike members and align said sidewalls of said first and second box sections, said guide members and said spike members cooperating to guide said second box section into engagement with said first box section in aligned abutting relation when said first and second box sections are assembled together, whereby the sidewalls of said said second box section form extensions of the sidewalls of said first box section,

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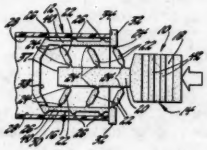
4,605,140

TUBE CLOSURE MEMBER HAVING TOGGLE ACTION

Mark A. Koors, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1985, Ser. No. 773,992
Int. Cl.[4] B65D *53/00*
U.S. Cl. 220—233 **2 Claims**



1. A closure member used to close the aperture of an integrated circuit package carrier tube having side walls, said closure member having a central body manually operable surrounded on three sides by a rib member, a plurality of toggle means operatively interconnecting said central body and said rib member, said rib member having a surface on the outer periphery for frictionally engaging the side walls of said aperture, said toggle means being operable permitting said central body to move linearly relative to said rib member simultaneously forcing said protuberances to frictionally engage the side wall surface, said rib member having stop means limiting the axial movement of said rib member, whereby said central body causes said toggle means to laterally expand said rib member achieving the desired closure function.

4,605,141

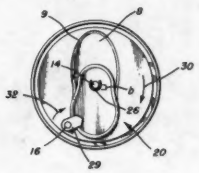
OPENING MEANS HAVING HOLD DOWN MEANS

Duksoo Won, West Haverstraw, N.Y.

Filed Mar. 1, 1985, Ser. No. 707,203
Int. Cl.[4] B65D *41/32*
U.S. Cl. 220—269 **12 Claims**

1. A metallic container, comprising:

a top wall having a rupturable score line defining a permanent top wall portion and an opening closure portion; pivot means spaced from said drinking opening; a pull tab pivotally connected with said pivot means, said pull tab comprising a solid pull tab portion having a size at least as large as said opening and a piercing portion, said pull tab being pivotal from an opening position wherein when said pull tab portion is lifted, said piercing portion presses on said opening closure portion to rupture said score line and form a drinking opening to a closing position wherein said pull tab portion completely covers said drinking opening; and a pivotal hold down tab located adjacent to said opening, said hold down tab being pivotal from a first normal position wherein said hold down tab is located



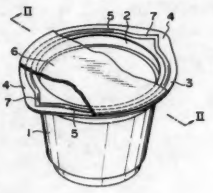
entirely over said permanent top wall portion to a second hold down position wherein a portion of said hold down tab is located over said opening whereby said hold down tab presses said pull tab portion onto said opening.

4,605,142

SYNTHETIC RESIN VESSEL AND HEAT SEALED LID

Shoji Itoh, Yokohama; Yukio Yanagawa, and Kouzō Wakabayashi, both of Saitama, all of, Japan, assignors to Toyo Seikan Kaisha, Ltd. and Tokan Kogyo Co., Ltd., both of Tokyo-To, Japan

Filed Jul. 17, 1984, Ser. No. 631,637
Int. Cl.[4] B65D *41/00*
U.S. Cl. 220—359 **19 Claims**



1. A vessel composed of a synthetic resin and having a top opening, a flange formed integrally with and along the peripheral edge portion of the opening, a continuous ridge protuberance formed on and along the top face of the flange, and a lid configured to overlie and rest upon the protuberance without contacting the interior of the vessel so that the lid can be heat-sealed through the protuberance to close the opening and can be removed by unsealing, said vessel having a projection of beak-like shape of the continuous ridge protuberance extending on the top face of the flange, the top face being substantially flat, toward the outer periphery at one or both portions of the protuberance where an operation for the unsealing is started or/and terminated.

4,605,143

METHOD AND APPARATUS FOR RETAINING ARTICLES ON PACKFRAMES

Steven E. Parker, 514 S. 119th St., Tacoma, Wash. 98444

Filed Feb. 4, 1985, Ser. No. 697,788
Int. Cl.[4] A45F *3/04*
U.S. Cl. 224—214 **17 Claims**

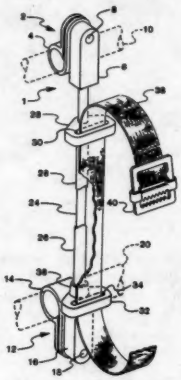
1. A device for attaching an ancillary article to a packframe which comprises:

a. first and second clamp means adapted for attachment to rigid, spaced apart, generally parallel packframe members;

b. rod means held between the clamp means;

c. at least one slotted strap retaining means swivelably mounted on the rod means and having at least limited freedom of movement along the rod means; and

d. strap means passing through the slots of the strap retaining means, said strap means being adapted to firmly but releasably hold an ancillary article to be attached to the packframe.



4,605,144

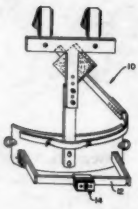
SUPPORT FOR A PERCUSSION INSTRUMENT

Thomas R. LaFlame, 107 Noble Ave., Pittsburgh, Pa. 15205

Filed Apr. 15, 1985, Ser. No. 723,335

Int. Cl.[4] A45F *3/10*

U.S. Cl. 224—265 **15 Claims**



1. A mounting structure for supporting a drum or like instrument with respect to an instrument carrier frame comprising:

a clamp means adapted to be secured to such a drum;

said clamp means including inner and outer clamp elements and respective inner and outer confronting clamp surface means having cooperable surface profiles which are adapted to engage respective inner and outer surfaces of a side wall portion of such an instrument to secure the instrument between said inner and outer clamp elements;

said outer clamp element being engageable with such a carrier frame for non-rotary support thereby;

selectively releasable securing means cooperable with said clamp means for selectively securing and releasing said clamp means with respect to such a carrier frame;

laterally-spaced rotary constraint means associated with said clamp surface means for engaging such an instrument side wall portion in a manner to constrain the instrument against rotation with respect to said clamp means, and

at least one of said securing means and said rotary constraint means being effective to maintain said inner and outer clamp elements in clamping engagement with such an instrument side wall portion therebetween.

4,605,145

SHEET SEPARATING STRUCTURE

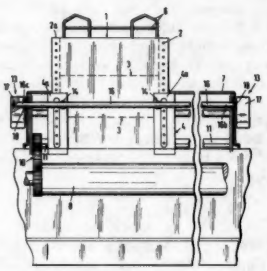
Günther Engelhardt, Niederstotzingen, and Gerhard Lohrmann, Elchingen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 689,866

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400894

Int. Cl.[4] G03B *1/30*

U.S. Cl. 226—74 **6 Claims**



1. A structure for separating individual sheets or sheet bundles from a sheet stock supply there being transverse tear perforations provided, the structure provided for cooperating with a printer, typewriter, or the like having a housing and including means for transporting and passing such endless sheet stock through the machine; comprising:

a rotatable sheet clamping shaft for providing clamping action;

means for mounting said clamping shaft to said housing, the shaft as so mounted having first, nonclamping and second, clamping positions in relation to said sheet stock as passed through by said means for transporting;

means associated with and operated by said clamping shaft for obtaining clamping of sheet stock in the first position and unclamping in the second position; and

means disposed external to said housing and connected to said clamping shaft for turning said clamping shaft to change its disposition, permitting manual tear off of the portion of the clamped sheet stock outside the clamping zone.

4,605,146

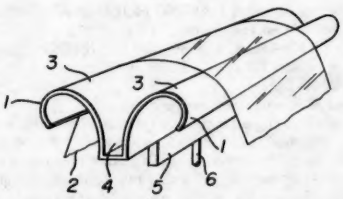
HYDROSTATIC FILM SUPPORT

Gilles Petitjean, Arlon, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 15, 1985, Ser. No. 702,332

Int. Cl.[4] F26B *13/20, 13/10*

U.S. Cl. 226—97 **10 Claims**



1. A web handling device for providing hydrostatic support to a moving web of material comprising

(a) adjacent bearing bars, across which the supported web moves, in operation, having (i) arcuate, smooth, surfaces

and being (ii) holefree at lines of web proximity, in operation,

(b) a pressure chamber between the bearing bars and open toward the arcuate surfaces,

(c) fluid supply means to the pressure chamber.

4,605,147

ROLL FEED APPARATUS

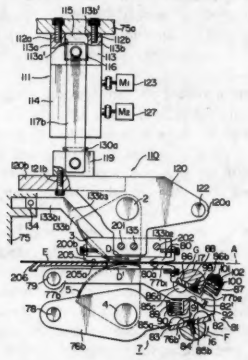
Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Sep. 3, 1985, Ser. No. 771,923

Claims priority, application Japan, Sep. 18, 1984, 59-141374[U]

Int. Cl.[4] B65H *20/02, 20/04*

U.S. Cl. 226—156 **1 Claim**



1. A roll feed apparatus having a first roll integrally carried by a first roll shaft for oscillatory rotation therewith, a second roll integrally carried by a second roll shaft for oscillatory rotation in the direction counter to that of rotation of said first roll, said second roll being adapted for cooperation with said first roll in clamping therebetween a sheet and feeding said sheet, a releasing/braking means for moving, when said rolls are rotated in the directions counter to the feeding directions, said second roll away from said first roll such as to release the clamping force which has been exerted by said rolls on said sheet, said releasing/braking means having first and second braking members, the first braking member being adapted to be moved towards said second braking member such as to temporarily fix said sheet when said sheet is unclamped from said rolls, and an adjusting device for adjusting the gap between said first and second rolls, wherein said adjusting device includes a pivot member having one end fitting on a first pivot shaft extending from the housing of the apparatus substantially in parallel with said first roll shaft and the other end which is free, said pivot member being mounted at its position between said one and said free ends on said first roll shaft, said pivot member being adapted to cause, when it pivots, said first roll shaft and said first roll to move towards and away from said second roll, and wherein said releasing/braking means includes a braking position adjusting arm disposed between said pivot member and the path of feed of the sheet such as to extend in parallel with the path and pivotally carried by said pivot member for pivotal movement about a second pivot shaft parallel to said first roll shaft, and an adjusting plate pivotally secured to said pivot member through a third pivot shaft adjacent and parallel to said second pivot shaft, said adjusting plate being disposed adjacent said path of feed of said sheet such as to extend in parallel with said path, said braking position adjusting arm having one end pivotable on a fourth pivot shaft which is adjacent said free end of said pivot member and parallel to said first roll shaft, said one end of said braking position adjusting member being mounted on said housing for a slight sliding movement together with said fourth pivot shaft in the direction of feed of said sheet and in the counter direction, the other end of said braking position adjusting arm between said first pivot shaft and said first roll shaft being provided with said second braking member, said adjusting plate being pivotally connected to said braking position adjusting by means of a fifth pivot shaft adjacent said second braking member and extending in parallel with said first roll shaft, said adjusting plate having one end disposed between said first roll shaft and said fourth pivot shaft and provided with a first guide member which is adapted to guide the feeding of said sheet in cooperation with a second guide member facing said first guide member across said path of feed of said sheet, the positions of said first to fifth pivot shaft, position of said first roll shaft, position of said second braking member, position of said first guide member and the radius of said first roll being determined in relation to one another such that an imaginary plane connecting the portions of said first roll, second braking member and said first guide member is moved substantially in parallel with the path of feed of said sheet.

4,605,148

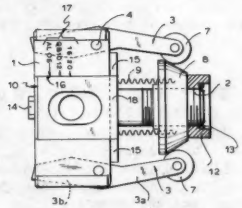
PLANETARY WIRE-FEEDING DEVICE

David A. Samokovlitski; Georgi I. Georgiev; Rumen P. Peychev; Sami S. Levi, and Lazar O. Petrov, all of Sofia, Bulgaria, assignors to Insitute po Technicheska Kibernetika iRobotika, Sofia, Bulgaria

Filed Nov. 15, 1984, Ser. No. 671,560

Int. Cl.[4] B65H *20/00*

U.S. Cl. 226—174 **6 Claims**



1. A planetary wire-feeding device, comprising a body, two oppositely disposed similar first-class levers pivotally mounted on the body, the levers each having a first and a second arm, the first arms of the levers being in contact with the faces of pistons which carry skewed wire-feeding rolls arranged on the body opposite one another and radially with respect to the axis of an electrode wire traveling axially through the body of the device, a guiding cone on the body, the second arms of the levers being in thrusting relationship with the guiding cone, the cone being mounted axially movably within the body, a coil compression spring disposed on the body coaxially therewith, the larger diameter end of the guiding cone being in contact with one end of the coil compression spring, the other end of the spring being in contact with an adjustable abutment means on the body of the device for calibrating the force which the spring exerts upon the cone, whereby to adjusting the force which the feeding rolls exert upon the wire being fed thereby.

4,605,149

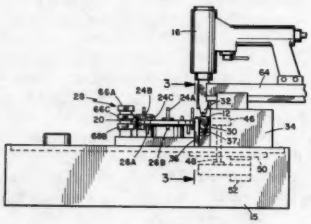
STAPLING MACHINE

Eldon F. Farrens, Imperial Beach, Calif., and Arthur M. Tillery, 4602 Katy Ct., La Mesa, Calif. 92041, assignors to Arthur M. Tillery and Elinor E. Tillery, both of National City, Calif.

Filed Apr. 19, 1985, Ser. No. 725,218

Int. Cl.[4] B27F *7/09, 7/34, 17/28*

U.S. Cl. 227—7 **9 Claims**



1. A machine for driving objects into a rod at spaced intervals, comprising:

object applying means for driving objects into the rod;

drive means for moving the rod in a drive path past the object applying means;

an indexing wheel mounted for rotation about an axis transverse to the drive path and positioned with its periphery adjacent the drive path to be contacted and driven to rotate by a rod moving along the drive path;

a series of switch actuating pins of at least two different heights projecting outwardly at spaced intervals from an annular ring around one axial face of the wheel;

switch means adjacent the periphery of the wheel for controlling operation of said object applying means, including a first switch positioned for contact with pins of both heights and a second switch positioned for contact with the tallest pins only, on rotation of said indexing wheel; and

switch selector means for selecting either of the switches for controlling operation of the object applying means.

4,605,150

BUTTON SETTING APPARATUS WITH OPTICAL POSITION INDICATOR

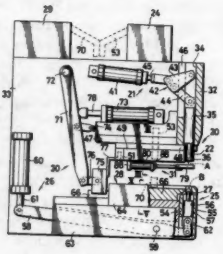
Ichiro Ikehara, Toyama, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1984, Ser. No. 686,541

Claims priority, application Japan, Dec. 29, 1983, 58-200487[U]; Dec. 29, 1983, 58-200493[U]

Int. Cl.[4] A41H *37/10*

U.S. Cl. 227—18 **5 Claims**



1. An apparatus for attaching a pair of fastener elements of a garment fastener to a garment fabric, comprising:

(a) a frame;

(b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said lower unit having a die, said upper unit having a punch reciprocably movable toward and away from said die to join the two fastener elements together with the garment fabric sandwiched therebetween;

(c) a pusher mechanism for supplying one fastener element at a time to said upper unit;

(d) a first actuator mounted on said frame for driving said pusher mechanism; and

(e) means for indicating a position on the garment fabric where the two fastener elements are to be attached, said indicating means including

(1) a tubular housing having therein a light source for projecting a beam of light, and a reflector for reflecting the light beam dowardly, and an aperture in a circumferential wall of said tubular housing below said reflector for the passage therethrough of the reflected light beam, and

(2) a second actuator operatively connected to said tubular housing for reciprocating it toward and away from said position where said aperture is in registry with a common vertical axis of said punch and said die.

3. An apparatus for attaching a pair of fastener elements of a garment fastener to a garment fabric, comprising:

(a) a frame;

(b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said lower unit having a die, said upper unit having a punch reciprocably movable toward and away from said die to join the two fastener elements together with the garment fabric sandwiched therebetween;

(c) a pusher mechanism for supplying one fastener element at a time to said upper unit;

(d) a first actuator mounted on said frame for driving said pusher mechanism; and

(e) means for indicating a position on the garment fabric where the two fastener elements are to be attached, said indicating means including

(1) a light projector having a light source for projecting a beam of light, a reflector for reflecting the light beam downwardly, and means defining an aperture for the passage therethrough of the reflected light beam,

(2) a second actuator operatively connected to said light projector for reciprocating at least said reflector and said aperture-defining means toward and away from said position where said aperture is in registry with a common vertical axis of said punch and said die, and

(3) means for selectively changing the color of the light beam projected from said light source.

4,605,151

CHUCK ASSEMBLY

Kenneth W. Brown, Cambridge, United Kingdom, assignor to The Welding Institute, Cambridge, England

Filed Jul. 12, 1985, Ser. No. 754,614

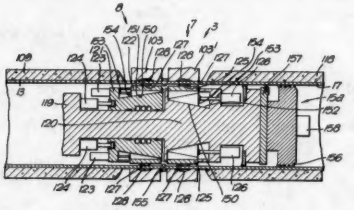
Claims priority, application United Kingdom, Jul. 20, 1984, 8418553; Jul. 20, 1984, 8418554

Int. Cl.[4] B23K *20/12, 37/04*

U.S. Cl. 228—2 **18 Claims**

1. A chuck assembly comprising a plurality of external jaws arranged in an annular configuration; and a corresponding plurality of internal jaws positioned within a pipe in use with the internal and external jaws in alignment, said jaws being adapted to move in a radial direction relatively to one another to grip a pipe wall therebetween, wherein at least one of said

internal and external jaws defines a griping portion comprising one of a projection and a recess adapted to cooperate with a



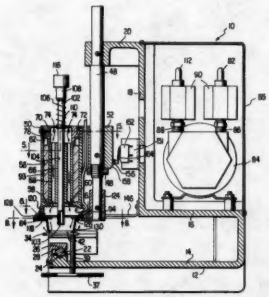
corresponding recess or projection respectively in the wall of a pipe.

4,605,152

DEVICE FOR ATTACHING MODULAR ELECTRONIC COMPONENTS TO OR REMOVING THEM FROM AN INSULATIVE SUBSTRATE

Robert Fridman, Randallstown, Md., assignor to Pace, Incorporated, Laurel, Md.

Filed Feb. 24, 1984, Ser. No. 583,218
Int. Cl.⁴ B23K *1/12, 31/02*
U.S. Cl. 228—6.2 **10 Claims**



1. A device for attaching modular electronic components to or removing them from a substrate, said device comprising:

(a) a frame having a support shaft secured at one end to said frame,

(b) heater means slidably mounted on said support shaft intermediate the ends thereof for heating a flow of air from a source, said heater means having a first nozzle means secured to one end thereof for directing said heated air flow,

(c) means for adjustably positioning said substrate containing said modular electronic component beneath said heater means, and

(d) holder means slidably mounted on the other end of said shaft, said holder means having a second nozzle means removably mounted thereon which is adapted to substantially enclose said modular electronic component and direct said heated air flow from said first nozzle means adjacent the sides of said component to melt solder associated therewith.

9. A device for attaching modular electronic components to or removing them from a substrate where each said component has a plurality of terminals extending from the periphery thereof, said device comprising:

heater means having at least one passage extending therethrough for heating a fluid flowing through said passage;

first nozzle means disposed at one end of the heater means, said first nozzle means including a plate having a plurality of nozzle openings where the configuration of the plurality of openings generally corresponds to that of the plurality of terminals of the component and where the heated fluid from the heater means flows through the nozzle openings; and

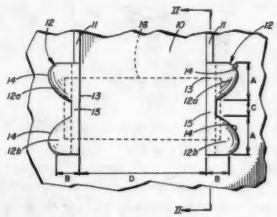
second nozzle means disposed adjacent said first nozzle means for directing the heated fluid flowing through the nozzle openings to the terminals of the component, said second nozzle means having side walls defining a lower opening positionable adjacent said electronic component, said lower opening being larger than the periphery of said electronic component, said second nozzle means being separated from said substrate by a gap whereby heated fluid flows out of said gap after it has melted said solder.

4,605,153

SHAPED SOLDER PAD FOR REFLOW SOLDERING OF SURFACE MOUNTING CYLINDRICAL DEVICES ON A CIRCUIT BOARD

Jacques Van Den Brekel, Nepean, and Thomas K. Y. Ho, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 17, 1985, Ser. No. 745,108
Int. Cl.⁴ B23K *3/06*
U.S. Cl. 228—56.3 **3 Claims**



1. A mounting position for mounting a cylindrical surface mounting device on a surface of a circuit board by reflow soldering, comprising two shaped solder pads spaced apart on said surface along an axis, each solder pad having two spaced humps of solder, the humps spaced apart in a direction normal to said axis and defining a channel in which an end of the device can rest prior to reflow soldering, said channel also being of solder; each pad having a straight inner edge extending normal to said axis, the humps each having a convex arcuate outer edge extending along said surface away from said inner edge in a direction parallel to said axis and each hump having a convex arcuate shape viewed in cross-section in a plane normal to said surface and to said axis; the channels being aligned on said axis, the solder pads being spaced along said axis a distance whereby the ends of the device overlie said channels, the end surfaces of the device positioned outside of an outer surface of each channel and inside said arcuate outer edges.

4,605,154

RADIATOR HEATER SOLDER POURING PROCESS

Wayne A. Rhodes, Larray, Tenn., assignor to Johnstone Railway Supply Mfg., Co. Inc., Kenton, Tenn.

Filed Jan. 28, 1985, Ser. No. 695,391
Int. Cl.⁴ B23K *31/02;* **B21D** *53/02;* **B23P** *15/26*
U.S. Cl. 228—102 **10 Claims**

1. A method of soldering tubular members of a cooling radiator which are inserted through holes in a top and bottom header comprising:

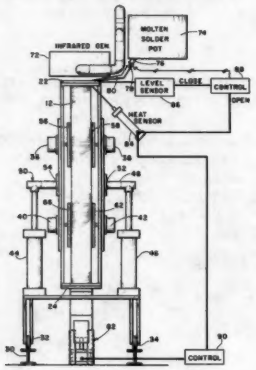
(a) sealing the space between said tubes and the wall of said holes with a high temperature solder melting at the temperature T_1;

(b) using infrared heat to heat one of said headers to a temperature T_2 which is less than T_1 but above a lower melting point temperature T_3 of a second solder;

(c) upon said one header reaching the temperature T_2 pouring a selected amount of said second solder in a molten stage in said header and blowing a cooling medium through said tubular members.

8. An apparatus for soldering tubular members of a cooling radiator which are inserted through holes in a top and bottom header, said header having a pan and which comprises:

frame means for holding said radiator in an upright position with said header in a horizontal position;



heating means to heat said header to a selected temperature;

a solder pot for holding molten solder which has a melting temperature less than said selected temperature and supported by said frame means at a position at a higher level than said header and including valve means for permitting the flowing of liquid solder onto the pan of said header;

means to sense the temperature of said header and to open said valve means when said header reaches said selected temperature;

means to blow a cooling medium through said tubular members.

4,605,155

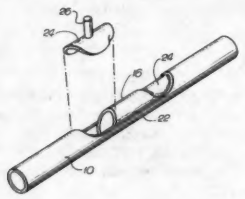
METHOD OF REPAIRING HIDDEN LEAKS IN TUBES

Joseph D. Duesberg, Canoga Park, and Raymond C. Mills, Sr., Oxnard, both of Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 30, 1985, Ser. No. 770,920

Int. Cl.[4] F16L *55/18*

U.S. Cl. 228—119 **16 Claims**



1. A method of repairing a leak in a tube in which access to the tube in the area of the leak is restricted, comprising the steps of:

removing a portion of the tube wall from an accessible area of the tube near the leak to form an opening having a length along the tube;

inserting a tubular insert whose outer circumference is approximately equal to the inner circumference of the tube and whose length is shorter than the length of said opening made in the tube wall into said opening, and positioning the insert so the insert wall covers the leak and each end of the insert is accessible through a space between that end of the insert and the adjacent circumference of said opening;

securing the insert within the tube so as to seal the leak;

sealing each space between the end of the insert and the circumference of said opening with a patch to close the wall of the tube whereby a leak-free tube repair is obtained.

4,605,156

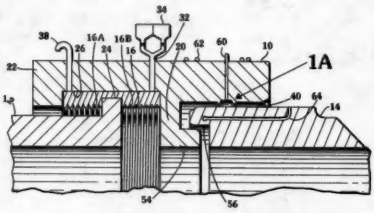
COLD WELDED JOINT

Donald D. Stenger, San Diego, Calif., and John F. Coulahan, Bridgewater, N.J., assignors to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Feb. 25, 1985, Ser. No. 705,248

Int. Cl.[4] B21D *39/04;* **F16L** *53/00, 55/00*

U.S. Cl. 228—127 **10 Claims**



1. A cold weld joint formed by forces of shrink fit comprising:

a cylindrical hollow coupling member for receiving two conductors, and inner surface of said coupling member being provided with weld pads,

a first conductor having a mating surface area which is brought into telescoping relationship with said pads,

restricting means in said coupling member and said first conductor to limit the flow of the material of said weld pads,

means on said coupling to heat said coupling to increase its diameter to allow said first conductor to be telescoped within said coupling member, said coupling upon cooling causes the material of the weld pads to flow and engage said first conductor by the force of shrink fit to form a cold weld between the coupling and the first conductor,

a bellows, and

a second conductor in telescoping relationship with the coupling member and connected thereto by said bellows which provides compensation for misalignment of the coupling member and conductors when initially brought together.

7. A cold weld joint formed by forces of shrink fit comprising:

a cylindrical bored coupling member for receiving two conductors, the bore in said coupling member being provided with cold weld pads and spaced apart raised serrations,

a first conductor having flush serrations on its outer diameter spaced apart distance coextensive with the serrations on said coupling to form a mating surface are therebetween which is brought into telescoping relationship with said cold weld pads,

heating coils on the outer surface of said coupling to cause said weld pads to increase in diameter to enable telescop-

ing of first conductor as a step in joint assembly and disassembly process; and

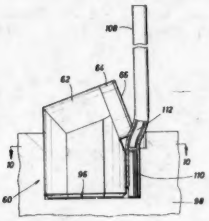
a second conductor in telescoping relationship with the coupling and connected thereto by bellows alignment means which provide compensation for misalignment of the parts when initially brought together.

4,605,157

DRILL BIT MANUFACTURING METHOD

John D. Barr, Cheltenham, and Haydn R. Lamb, Gloucester, both of United Kingdom, assignors to NL Industries, Inc., New York, N.Y.

Filed Jan. 31, 1984, Ser. No. 575,555
Int. Cl.[4] E21B *10/58*
U.S. Cl. 228—132 **23 Claims**



1. A method of mounting a cutter device, having a stud portion defining one end thereof and a cutting formation generally adjacent the other end, in a pocket in a drill bit body member, said method comprising the steps of:

forming channel means extending into said pocket by inserting a channel member into said pocket adjacent a side wall thereof;

inserting brazing material into said channel means;

inserting said stud portion of said cutter device into said pocket;

then heating said bit body member to cause said brazing material to flow through said channel means into said pocket;

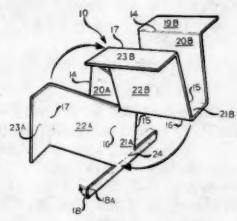
then re-cooling said bit body member.

4,605,158

CARTON DIVIDER WITH POSITIONING MEANS

Harold A. Barton, South Pasadena, Calif., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 498,384, May 26, 1983, abandoned. This application Jun. 24, 1985, Ser. No. 748,107
Int. Cl.[4] B65D *1/36*
U.S. Cl. 229—15 **3 Claims**



1. In a rectangular corrugated paperboard carton having opposed pairs of vertical side walls defining a rectangular perimeter thereof, each said wall having flaps at either vertical end, respectively, foldable to form opposite end closure walls of said carton, the combination therewith of

a divider formed from a rectangular blank of corrugated paperboard having a longitudinal center line, opposite end panels on either side of said center line, an intermediate panel hingedly connected to each of said end panels and a rectangular center panel on opposite sides of said center line hingedly connected at both side edges to the intermediate panels adjacent thereto, center panels being hingedly connected at a top edge to each other along the said center line, and a center line slot on either side of said center panels separating the end and intermediate panels on one side of the center line from the end and intermediate panels on the other side thereof;

said central panels having a width substantially less than the width of the carton within which the divider is adapted to be positioned, a positioning flap hingedly connected to the free edge of one of said central panels, said positioning flap having a length greater than the width of the central panel and extending beyond both side edges of the central panel;

said divider being folded at said center line to form a generally H-shaped divider for insertion in the carton with the positioning flap in surface engagement with the bottom end closure wall of the carton;

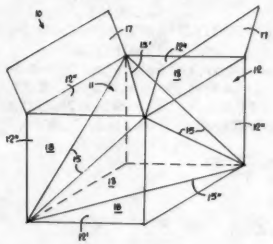
and interengaging means between said positioning flap and said carton for holding the divider in assembled position in said carton.

4,605,159

REINFORCED BOX STRUCTURE

Gad J. Harrel, 119 Wilson Rd., Dollard des Ormeaux, Quebec, Canada

Filed Mar. 20, 1985, Ser. No. 713,804
Claims priority, application Canada, Mar. 29, 1984, 450811
Int. Cl.[4] B65D *5/00, 81/02*
U.S. Cl. 229—116 **6 Claims**



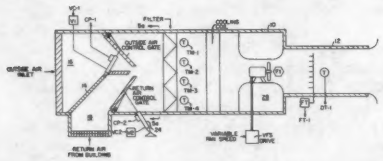
1. A reinforcing triangular container for a box enclosure, said container comprising a four sided hollow triangular enclosure formed of cardboard material and defining six straight edges and four side walls, securable opening means for access to the interior of said triangular enclosure for positioning articles therein, said triangular enclosure being dimensioned for positioning in said box enclosure with at least some of said straight edges in diagonal contact with a respective wall of said cardboard box to reinforce same while said side walls of said triangular enclosure are spaced inwardly of the walls of said box, there being two of said triangular enclosures in said cardboard box, four of said straight edges of each said triangular enclosure being in contact with a side wall of said cardboard box, each said triangular enclosure having a top and bottom transverse edge disposed in transverse relationship to like edges of the other of said triangular enclosures with one of said sides of each said triangular enclosure in partial abutment, said two triangular enclosure being arrested between said side walls of said box.

4,605,160

AIR BLENDING APPARATUS FOR HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

James L. Day, 7480 Dryer Rd., Victor, N.Y. 14564

Filed Jun. 8, 1984, Ser. No. 618,801
Int. Cl.[4] G05D *23/13*
U.S. Cl. 236—13 **26 Claims**



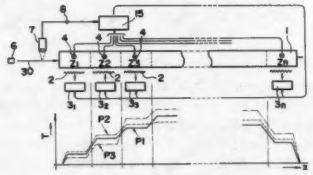
1. Air-blending apparatus comprising a chamber having a first inlet for outside air and a second inlet for return air and an outlet, a partition dividing a portion of said chamber adjacent to said inlet into first and second compartments, said partition extending from inlet ends of said compartments near said first and second inlets in the direction of said outlet to outlet ends of said compartments, first and second dampers pivotally mounted in said chamber on opposite sides of said partition, said dampers being rotatable into and out of closing engagement with said oulet ends of said compartments, said dampers defining a region of said chamber on opposite sides of said partition and between said outlet ends thereof and the outlet of said chamber of volume variable in accordance with the position of said dampers, means responsive to conditions representing stratification of the air in the vicinity of said outlet of said chamber, and means responsive to said last-named means for controlling the position of said dampers whereby to prevent stratification of the air in the vicinity of said outlet of said chamber.

4,605,161

PATTERN-SWITCHING TEMPERATURE CONTROL APPARATUS

Takehiko Motomiya, and Shigeu Ogawa, both of Tokyo, Japan, assignors to Ohkura Electric Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1985, Ser. No. 725,413
Claims priority, application Japan, Nov. 24, 1984, 59-247015
Int. Cl.[4] G05D *23/19*
U.S. Cl. 236—15 BC **9 Claims**



1. A pattern-switching temperature control apparatus for a furnace with a number of zones, each zone having a temperature detecting element and a heating element mounted thereon, comprising

a memory storing a series of inside temperature distribution patterns for the furnace and a series of numbers, each of which numbers represents a predetermined quantity of works of one kind to be heat-treated in the furnace at corresponding one of said temperature distribution patterns;

a temperature setting element on which one of said inside temperature distribution patterns is placed zone by zone;

a counting means for counting the number of those works of one kind which have been heat-treated at one of said temperature distribution patterns;

a setting means adapted to reset said counting means to zero and to place a next succeeding one of said inside temperature distribution patterns from said memory when count of said counting means coincides with said predetermined quantity of said one kind of works; and

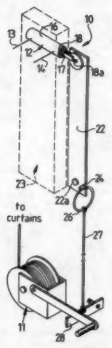
a regulating means adapted to control said heating element depending on difference between said inside temperature distribution pattern stored in the temperature setting element and actual temperature detected by said temperature detecting element zone by zone.

4,605,162

EMERGENCY VENTILATOR OPENER FOR LIVESTOCK HOUSES

Grantlin W. Crider, Rte. 1, Box 17, Bremen, Ala. 35033

Filed Jan. 2, 1985, Ser. No. 688,299
Int. Cl.[4] F24F *13/10*; G05D *23/30*
U.S. Cl. 236—49 **4 Claims**



1. In a livestock and poultry house having at least one ventilation opening along a wall thereof, a closure for opening and closing said ventilation opening, an electrically operated ventilation means for providing ventilation to the house and an electrical power supply, the improvement comprising:

(a) electrically operated thermal generator means operatively connected to said power supply and having a thermal output substantially confined to the region immediately surrounding said generator means; and

(b) latch means operatively connected to said closures and mounted for movement selectively to a first position proximal said thermal generator and to a second position distal said thermal generator and responsive to said thermal output to open said closures upon movement of said latch means to said second position, wherein said thermal generator means comprises a cylindrical resistance heater having an axial bore for receiving at least a portion of said latch means therewithin.

4,605,163

PASSENGER ROOM HEATING SYSTEM FOR USE WITH BOILING LIQUID ENGINE COOLING SYSTEM

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 9, 1985, Ser. No. 764,113
Claims priority, application Japan, Sep. 29, 1984, 59-202943
Int. Cl.[4] B60H *1/02*
U.S. Cl. 237—2 A **9 Claims**

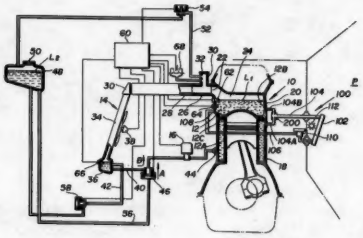
1. In a motor vehicle powered by a combustion engine cooled by a boiling liquid cooling system which includes a coolant jacket defined in the engine proper and containing

therein a liquid coolant to a certain level to cover highly heated portions of the engine, a condenser for condensing the gaseous coolant introduced thereinto from the coolant jacket and recirculating means for recirculating the coolant thus liquefied by the condenser back into the coolant jacket,

a passenger room heating system comprising:

a heat exchanger through which a liquid flows for achieving heat exchange between the liquid and air in the passenger room;

verticallty spaced first and second outlet ports formed in the engine proper to connect the coolant jacket separately, the second outlet port being positioned higher than the first outlet port when the engine proper is properly mounted in the vehicle;



a first conduit extending from a junction portion of the first and second outlet ports of said coolant jacket to a coolant inlet port of said heat exchanger;

a second conduit extending from a coolant outlet of said heat exchanger to said coolant jacket;

pumping means for enforcedly recirculating the coolant through the first conduit, the heat exchanger, the second conduit and the coolant jacket in this order; and

switch means associated with the first and second outlet ports, the switch means functioning to open the second outlet port and close the first outlet port when the temperature of the coolant is lower than a predetermined degree and to close the second outlet port and open the first outlet port when the temperature of the coolant is higher than the predetermined degree.

4,605,164

CABIN HEATING ARRANGEMENT FOR VEHICLE HAVING EVAPORATIVE COOLED ENGINE

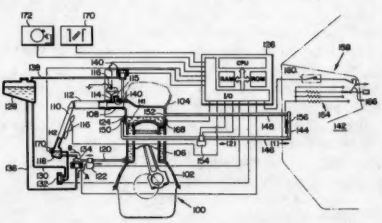
Yoshimasa Hayashi, Kamakura, and Naoki Ogawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 17, 1985, Ser. No. 777,019

Claims priority, application Japan, Sep. 29, 1984, 59-204584

Int. Cl.[4] B60H *1/02*

U.S. Cl. 237—2 A **15 Claims**



1. In an automotive vehicle having a passenger compartment and an engine compartment:

an engine, said engine being disposed in said engine compartment and having structure which is subject to high heat flux;

a cooling system for removing heat from said engine; and

a passenger compartment heating arrangement incorporated with said cooling system, said cooling system and said passenger heating arrangement comprising:

a coolant jacket disposed about said engine into which coolant is introduced in liquid form and allowed to boil;

a radiator fluidly communicated with said coolant jacket, said radiator being arranged to receive gaseous coolant produced by the boiling of the liquid coolant in said coolant jacket and condense same to its liquid form;

means for returning liquid coolant from said radiator to said coolant jacket in a manner which maintains the level of coolant in said coolant jacket at a first predetermined level, said first predetermined level being selected to immerse said strcture in a predetermined depth of liquid coolant;

a cabin heater disposed in said passenger compartment, said cabin heater including a core through which coolant may pass;

a first port formed in said coolant jacket at a level higher than said first predetermined level;

a second port formed in said coolant jacket at a level lower than said first predetermined level and proximate said structure;

a circulation pump in fluid communication with said core and said first and second ports, said pump being selectively energizable to pump coolant from said first port to said second port via said core during a first mode of operation and pump coolant from said second port to said first port via said core during a second mode of operation.

4,605,165

CONSTANT RATE VOLATILE COMPOSITION DISPENSING ARTICLE AND PROCESS FOR USING SAME

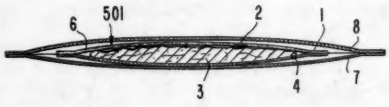
Augustinus G. Van Loveren, Rye; Marina A. Munteanu, New York, both of N.Y., and Geoffrey B. Seaber, Ijsselstein, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,167

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.[4] A61L *9/04, 9/01, 9/12*

U.S. Cl. 239—6 **12 Claims**



1. A hollow totally enclosed structure capable of the release into the space surrounding said structure at a substantially constant rate of at least one volatile consumable material consisting of volatile consumable material molecules, said volatile consumable material being selected from the group consisting of: perfume compositions, herbicide compositions, insecticide compositions, animal repellent compositions, air freshener compositions, pheromone compositions, odor maskant compositions, deodorant compositions, insect repellent compositions and compositions for the evaluation of olfactory funtioning in humans; said structure comprising (i) a thin shell totally enclosing an inner void with at least a first finite section of said thin shell being a microporous polymer shell section consisting of a porous membrane having (1) the property of transporting water vapor at a rate of from about 50 g/m^2/day up to about 1000 g/m^2/day at about 25° C. and at about 50% relative humidity at about atmospheric pressure and having an air transport rate of 100–20,000 Gurley seconds (Gs) and (2) a

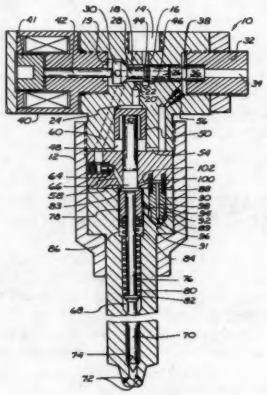
thickness in the range of from about 0.01 mils up to about 20 mils; the remaining second section of said thin shell having a porosity equal to or less than the porosity of said first finite section, said microporous polymer shell section consisting essentially of a polyolefin intimately admixed with a powder having an average particle diameter of from about 0.3 up to about 500 microns, said powder being a filler material incompatible with said polymer, said powder being in a proportion of from about 5 to 100 parts by weight per 100 parts by weight of polymer, the said volatile composition having a volatility at ambient conditions which is higher than the transmissibility of said microporous polymer shell section, and (ii) located within said inner void on a portion of said second section, said volatile consumable material, releasably entrapped in a gel.

4,605,166

ACCUMULATOR INJECTOR

William W. Kelly, Granby, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Feb. 21, 1985, Ser. No. 704,033
Int. Cl.[4] F02M *41/16, 47/02;* B05B *1/30;* F02D *39/10*
U.S. Cl. 239—96 **12 Claims**



10. An accumulator injector for injecting a pressurized charge of fuel into a cylinder of an internal combustion engine comprising:

an injector body having a fuel inlet for receiving pressurized fuel at a supply pressure, an accumulator pressure chamber communicating with said fuel inlet for accumulating pressurized fuel, and a valve opening for discharging accumulated pressurized fuel;

a control chamber communicating with said fuel inlet and adapted for rapid charging with pressurized fuel;

pressure release means controllably actuable to effect a rapid decrease in pressure in said control chamber;

a valve member axially displaceable in response to opposing pressures in said accumulator and control pressure chambers to open and close said valve opening;

a shuttle bore forming opposing bleed chambers communicating with said control and accumulator pressure chambers;

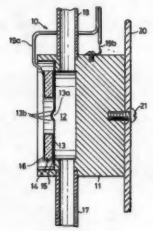
a shuttle piston means received in said shuttle bore and displaceable in response to the pressure differential between said control chamber and said accumulator chamber to inversely variably change the volume of said opposing bleed chambers so that actuation of said pressure release means results in a two-phase displacement of said valve member.

4,605,167

ULTRASONIC LIQUID EJECTING APPARATUS

Naoyoshi Maehara, Nara, Japan, assignor to Matsushita Electric Industrial Company, Limited, Japan

Filed Jan. 17, 1983, Ser. No. 458,881
Claims priority, application Japan, Jan. 18, 1982, 57-6284; Feb. 10, 1982, 57-20030; Jun. 23, 1982, 57-107901
The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.
Int. Cl.[4] B05B *3/14*
U.S. Cl. 239—102 **13 Claims**



1. An ultrasonic liquid ejecting apparatus comprising:

a housing including a chamber for holding liquid therein having an intake port connected to a liquid supply container;

a vibrator system including a vibrating member secured to said housing in pressure transmitting relation with the liquid in said chamber so that the vibrating member defines a front wall of said chamber and having at least one nozzle opening therein and a piezoelectric transducer secured to said vibrating member for inducing therein a displacement at each vibration to discharge a small amount of liquid through said nozzle opening;

means in communication with said chamber for maintaining static pressure therein at a value equal to or lower than pressure in front of the vibrating member; and

means for exciting said transducer at a frequency substantially equal to the resonant frequency of said vibrator system.

4,605,168

ROTATING SPRAYING TYPE COATING APPARATUS WITH WASH SHROUD

Kazuyuki Tachi; Chikaaki Okuda, and Shoichi Suzuki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 5, 1985, Ser. No. 805,570
Claims priority, application Japan, Dec. 13, 1984, 59-190365
Int. Cl.[4] B05B *3/10, 15/02*
U.S. Cl. 239—112 **4 Claims**

1. A rotating spraying type coating apparatus with wash shroud, comprising:

a rotary drive device;

a spraying head connected to the rotary drive device;

a paint feed passage connected to base end of the spraying head;

a paint radiating part formed at top end of the spraying head;

an air jet device of annular shape for jetting an air flow to direct paint particles forward which are radiated from the paint radiating part;

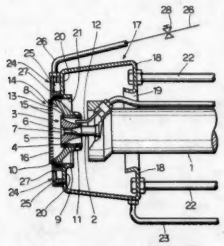
a coating pattern adjusting means for varying the flow rate of the air jetting from the air jet device;

a wash shroud covering outside of the spraying head and being movable forward and rearward; and

an opening formed at front end of the wash shroud,

whereby said wash shroud is disposed during coating to the rearward position where the paint radiating part of the spraying head projects from the opening at the front end

of the wash shroud and during washing to the forward position where the paint radiating part of the spraying head is arranged within the wash shroud,



wherein said air jet device is installed around the opening at the front end of the wash shroud.

4,605,169

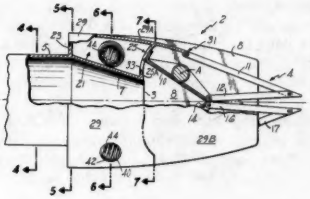
EXHAUST NOZZLE CONSTRUCTION

John L. Mayers, Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,488

Int. Cl.[4] F02K *1/42*

U.S. Cl. 239—265.29 **12 Claims**



1. In combination with an aircraft engine exhaust duct, a peripheral housing positioned around said exhaust duct forming a peripheral chamber, nozzle means being movable to control exhaust flow through said exhaust duct to provide a primary flow path, inlet openings located through said peripheral housing into said peripheral chamber for receiving exhaust flow from said exhaust duct, said nozzle means being movable to direct exhaust flow from said exhaust duct into said peripheral chamber through said inlet openings, outlet openings positioned in said peripheral housing to direct exhaust flow therefrom to provide a secondary flow path.

4,605,170

APPARATUS FOR WETTING MOLD SURFACES WITH A LIQUID

Hans Thurner, Baldham, Fed. Rep. of Germany, assignor to Bayrisches Druckgusswerk Thurner GmbH & Co. KG, Bavaria, Fed. Rep. of Germany

Filed Aug. 23, 1985, Ser. No. 768,811

Int. Cl.[4] B29C *39/22, 45/17, 45/83*

U.S. Cl. 239—444 **17 Claims**

1. Apparatus for wetting mold surfaces with a pressurized fluid for cooling, cleansing and lubricating purposes in pressure casting machines including a pair of mold elements comprising:

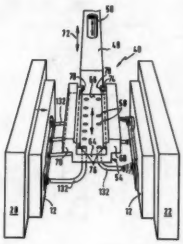
a spraying head having at least one directionally adjustable spraying nozzle;

said spraying head having pressure fluid inlet and pressure fluid feed line means;

channel means interconnecting said inlet with each spraying nozzle;

means defining at least one adjustable throttle valve to directly control the pressurized fluid directed to each spraying nozzle;

vertically and horizontally movable means for positioning said spraying head relative to said mold to spray said pressure fluid on said mold;



said spraying head further including an elongated manifold member and a replaceable spraying nozzle carrier sealingly secured to said elongated manifold, said manifold being fixed relative to said means for positioning, said elongated manifold member being provided with the inlets, channels and throttle valves for receiving, distributing and controlling the flow of said pressurized fluid therethrough; and

said spraying nozzle carrier slidably mounted on said manifold member and including passage bores aligned with and interconnecting said channels in said manifold member with said spraying nozzles for delivery of said pressure fluid to said mold surfaces.

4,605,171

FUEL INJECTOR HAVING FUEL-FILLED DAMPING CHAMBER

Dietrich Trachte, Leonberg, and Helmut Giess, Aspach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,043

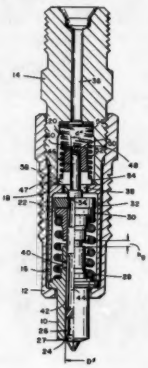
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3329380

Int. Cl.[4] F02M *61/08, 61/16*

U.S. Cl. 239—453 **6 Claims**

1. A fuel injection nozzle for internal combustion engines comprising a nozzle body, a valve seat integral with said nozzle body, and a valve needle displaceably supported in said nozzle body at an injection opening, said valve seat being monitored by said valve needle injection opening in the fuel flow direction, a closing spring in a first chamber for loading said valve needle, a fuel inflow line arranged to discharge into said first chamber, a second chamber upstream from said first chamber, a dividing wall means separating said second chamber from said first chamber and including a blocking shoulder in said second chamber, said valve needle including an end extension piston that extends with radial clearance through said dividing wall means into said second chamber, a cap including a blind bore bottom positioned on said end extension piston and arranged in said second chamber, a damping chamber formed by said cap, said blind bore bottom of said cap and an end face of said end extension piston, a throttle conduit in said cap adapted to lead away from and to said second chamber into said damping chamber, a restoring spring in said second chamber, acting on the cap for shifting the cap against said blocking shoulder on said dividing wall means, said cap arranged to rest on said blocking shoulder no later than after a

first pre-stroke of the valve needle, and said end extension piston of the valve needle includes a cross section which is



smaller than a cross section of said piston enclosed by said valve seat.

4,605,172

SENSORY APPARATUS

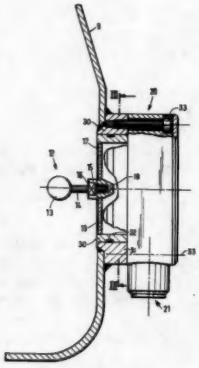
Dieter Ahlert, Ostercappeln, Fed. Rep. of Germany, assignor to Dierks & Söhne GmbH & Co. KG, Osnabrueck, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,629

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336218

Int. Cl.[4] B02C *25/00*

U.S. Cl. 241—33 15 Claims



1. Sensory apparatus for substances being mixed in a container comprising a container having a wall with an opening, a deflectable plate member disposed over said opening in said wall and which forms a continuation of said wall, a sensor element connected to said plate member and protruding from the inside of said plate member into the container and into the path of movement of the substances being mixed in the container such that said plate deflects depending on the mixing conditions in said container, and sensor detectors externally of said container on the outside of said plate member sensing the deflection of said plate member and providing signals indicative of said deflection and thereby indicative of the mixing conditions in said container.

4,605,173

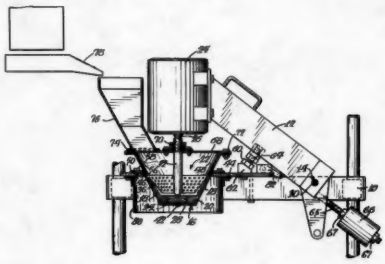
SIZE REDUCTION MACHINE

Harvey A. Edmonds, 108 Paradise Harbor Blvd., North Palm Beach, Fla. 33408

Filed Apr. 4, 1984, Ser. No. 596,651

Int. Cl.[4] B02C *19/08*

U.S. Cl. 241—36 7 Claims



1. Apparatus for reducing the particle size of materials comprising:

a frame;

an arm pivotally connected intermediate its ends to said frame;

a counter weight movably mounted on one end of said arm;

a motor having a drive shaft mounted on the other end of said arm;

an impeller connected to the free end of said motor shaft;

an enclosure carried by said frame below said motor, said enclosure having fenestrated side walls and an open top for receiving the motor shaft and said impeller, said enclosure being spaced apart from said impeller, said impeller being movable into and out of said enclosure upon pivotal movement of said arm; and

an adjustable stop positioned between said frame and said arm for limiting the maximum downward travel of said impeller into said enclosure, but not restricting upward travel of said impeller within said enclosure.

4,605,174

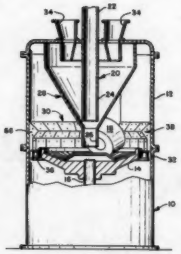
VANE WHEEL ARRANGEMENT WITH NIHARD WEAR PLATES

Theodore V. Maliszewski, North Canton, and David E. Kohler, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 447,916, Dec. 8, 1982. This application Jul. 2, 1984, Ser. No. 627,157

Int. Cl.[4] B02C *15/00*

U.S. Cl. 241—52 5 Claims



1. In a bowl mill having a substantially closed separator body, a rotatable grinding surface having a circumference and mounted within the separator body so as to be rotatable within

the separator body, at least one grinding roll mounted within the separator body so as to coact with the rotatable grinding surface, and an annular passage formed between the circumference of the rotatable grinding surface and the separator body so as to enable air to flow upwardly through the annular passage, the improvement comprising a vane wheel assembly for use within the bowl mill so as to be operative to affect the flow of air traveling within the bowl mill, said vane wheel assembly comprising:

(a) a plurality of vane wheel segments mounted to the rotatable grinding surface so as to be mounted in spaced relation one to another around the circumference of the rotatable grinding surface, each of said plurality of vane wheel segments including a vane wheel portion extending outwardly of the circumference of the rotatable grinding surface and into the annular passage at an angle of substantially 45 degrees relative to a vertical plane and in a direction counter to the direction of rotation of the rotatable grinding surface, so that air flowing through the annular passage is engaged by said vane wheel portion of each of said plurality of vane wheel segments and is caused thereby to change direction and to flow, upon exiting from the annular passage, in a direction opposite to the direction of rotation of the rotatable grinding surface;

(b) a plurality of vane wheel supports equal in number to the plurality of vane wheel segments, each of said plurality of vane wheel supports being fastened to a corresponding one of said plurality of vane wheel segments;

(c) a plurality of vane wheel deflector plates equal in number to the plurality of vane wheel segments, each of said plurality of vane wheel deflector plates being fastened to an adjoining pair of said plurality of vane wheel segments so as to be equally spaced across said adjoining pair of said plurality of vane wheel segments; and

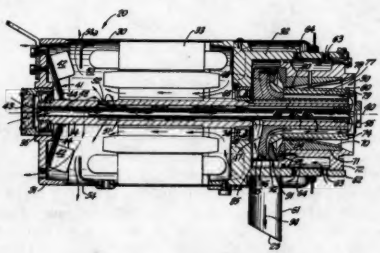
(d) an air restriction block means mounted around the circumference of the rotatable grinding surface, said air restriction block means comprising a multiplicity of air restriction blocks exceeding in number the number of said plurality of vane wheel segments, each of said air restriction blocks being mounted to the rotatable grinding surface so as to be located between said vane wheel segments.

4,605,175

PRECISION COFFEE GRINDER

Robert L. Weber, New Canaan, Conn., assignor to Webston, Inc., New Canaan, Conn.

Filed Sep. 10, 1984, Ser. No. 648,876
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—56 **13 Claims**



1. A grinder for grinding roasted coffee beans without heating the beans, including:

hopper means for holding a quantity of beans;

a grinder assembly having an entry port to receive the beans, an exit port to expel the ground beans, a motor having an output shaft, grinder head means to grind the beans, and air flow means to flow air through the grinder head means;

wherein the grinder head means grinds the beans in two stages, said first stage including a cracking cutter means positioned at said entry port to cut the beans into shavings and having a fixed member and a rotatable member rotatably driven by said shaft, one of said members being a cone having blades thereon and the other being a right cylindrical reel having blades thereon;

said second stage including a micro grinder means to finely grind the shavings received from the first stage and having at least one rotatable ring with blades on its flat face which is rotatably driven by said shaft, said micro grinder means receiving cut bean shavings from said first stage and delivering ground coffee selected to be in the size range 100–1500 microns to said exit port, wherein the predominant over 80% particle size is within 50 microns of the size selected;

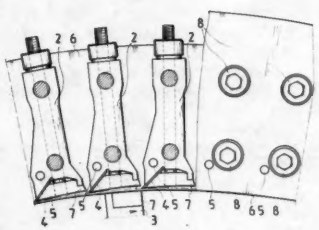
and wherein said micro grinder comprises two rings each being ring-shaped with a flat face thereon and having blades on said flat face, the blades facing each other and being spaced apart, and one ring being rotatable and the other ring being fixed.

4,605,176

BLADE RING FOR SHAVER

Matti Jaakonmäki, and Pentti Raura, both of Valko, Finland, assignors to Rauma-Repola Oy Loviisan Tehtaat, Finland

Continuation of Ser. No. 456,740, Jan. 10, 1983, abandoned. This application Jun. 26, 1985, Ser. No. 748,713
Claims priority, application Finland, Jan. 12, 1982, 820099
Int. Cl.[4] B02C *13/14*
U.S. Cl. 241—240 **2 Claims**



1. A blade ring for a shaver of chips comprising a plurality of blade units arranged in close succession in fixed ring configuration and constituting an envelope, a rotor rotatable within said envelope for only urging the chips against said blade units, each blade unit comprising a cutting blade having a cutting edge and a trailing counterblade, and means for adjustment of the thickness of the shavings of the chips comprising a pivot for each blade unit close to its respective cutting blade and paralleling its cutting edge for selectively turning said blade unit about said pivot, whereby the position of the counterblade of said blade unit is radially adjusted with reference to a cutting edge of a next blade unit to change the thickness of chip shavings.

4,605,177

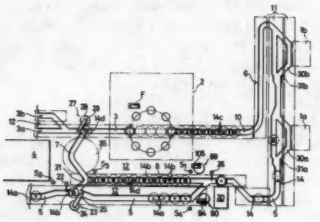
BOBBIN TRANSPORTING AND TREATING SYSTEM

Hiroshi Uchida, Oumihachiman; Kazuo Nakanishi, Uji, and Yoshihiko Kawasaki, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 19, 1984, Ser. No. 652,338
Claims priority, application Japan, Sep. 20, 1983, 58-173689; Sep. 21, 1983, 58-174843; Sep. 21, 1983, 58-174845
Int. Cl.[4] B65H *54/20, 67/06*
U.S. Cl. 242—35.5 A **10 Claims**

1. A bobbin and carrier transporting system, comprising: a winder, a bobbin yarn end readying device, a bobbin remover, a spinning bobbin supply station, a bobbin supplying path for

transporting bobbins and carriers from said bobbin yarn end readying device to said winder, a returning path for feeding back to said bobbin yarn end readying device bobbins and carriers discharged from said winder, a bobbin carrier discharging path branched from said bobbin supplying path for transporting bobbin carriers carrying bobbins from which yarn ends have not been readied successfully by said yarn end



readying device, a bypass path branched from said bobbin supplying path for transporting bobbins and carriers from said bobbin carrier discharging path to said returning path, and a branch path connecting a beginning end of said bypass path to said returning path, said bobbin remover, said spinning bobbin supplying station and said yarn end readying device being located adjacent said returning path.

4,605,178

DEVICE FOR THE COMPENSATING STORAGE OF PACKING BAND IN PACKAGING MACHINES

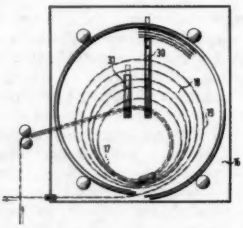
Günter Bartzick, Ennepetal; Gerd Bühne, Schwelm, and Reinhard Naydowski, Ennepetal, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,679

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3335964

Int. Cl.[4] **B65B** *13/02;* **B65H** *20/24, 20/26*

U.S. Cl. 242—55 **4 Claims**



1. A device for compensating for different speeds of a moving packaging band during unwinding and supplying of the packaging band to a packaging machine, the packaging band is unwound relatively slowly from a supply roll for long intervals and is supplied to a packaging machine after it has passed through a compensating storage unit interposed between the supply roll and the packaging machine, the device is characterized in that the compensating storage unit comprises:

a storage area adapted and constructed to accept and temporarily store a portion of a packaging band in a loosely coiled coil roll, the storage area being slightly wider that the width of a coil roll of a packaging band;

a circular ring positioned within the storage area defining a circle having a radius, a coil roll of a packaging band is positioned inside the circular ring, a coil roll of a packaging band having an outermost coil the radius of which is limited by the radius of the circular ring;

a guide supply track adapted and constructed for directing a packaging band from a supply roll to form a coil roll of a packaging band in the circular ring, a coil roll of a packaging band having an innermost coil to which a packaging band of the supply roll is directed;

a sensor for sensing the diameter of a innermost coil of a coil roll of a packaging band in the circular ring, the sensor comprises a lever which is pressed against a coil roll, the lever is provided with outwardly extending substantially parallel arms connected at inner ends with a generally centrally located sloping section that contacts the coils and as the radius of the smallest coil becomes smaller it presses the lever away from the coils; and

a switch for stopping a moving packaging band through the compensating storage unit when a preselected diameter of an innermost coil of a coil roll of a packaging band in the circular ring is reached, as determined by the movement of the lever away from the coils.

4,605,179

APPARATUS FOR WINDING UP FLAT MATERIAL WEBS

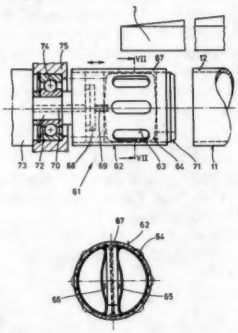
Conrad Arbter, Saal an der Saale, Fed. Rep. of Germany, assignor to Kolb & Schule AG, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,876

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334370

Int. Cl.[4] **B65H** *75/24, 75/28*

U.S. Cl. 242—72 B **7 Claims**



1. An apparatus for winding flat material webs, comprising a rotatable winding cylinder having a longitudinally extending slot in the surface thereof and an open end, a clamping device arranged within said cylinder behind the slot, the web being guided over the winding cylinder and being deflectable into the slot, said clamping device including means for engaging a deflected loop of the web and holding it within the winding cylinder, said clamping device permitting release of the web after the winding is effected, a blade movable over the winding cylinder and engageable in the slot to deflect a loop of the web material into engagement with the clamping device, said clamping device including resilient means engaging the loop of web material deflected through the slot on each side thereof, a back-up roller on each side of said winding cylinder supporting said winding cylinder for rotation, contact pressure roller means on each side of said back-up rollers, and a take-off device associated with said winding cylinder mounted alongside said winding cylinder at one end thereof, said take-off device comprises an axially displaceable clamping head which is introducible into the open end of said winding cylinder and which is braced against the interior of said winding cylinder in

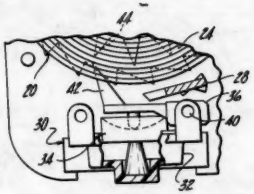
the manner of an internal chuck, said clamping head having a slot for receiving said blade, said blade having a blade portion enterable through the slot of said clamping head, said clamping head having an insert which comprises two inflatable parts arranged at respective sides of the slot of said clamping head, and a fluid pressure supply line connected to said inflatable parts for inflating them.

4,605,180

SEAT BELT RETRACTOR ASSEMBLY

Alfred J. Fisher, III, Grosse Pointe Farms, and Timothy J. Schmidt, Troy, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Filed Aug. 13, 1984, Ser. No. 640,468
Int. Cl.[4] B60R *22/40*
U.S. Cl. 242—107.4 A **4 Claims**



1. In an emergency locking seat belt retractor which prevents seat belt webbing from being withdrawn when said retractor is subjected to deceleration above a predetermined level, said retractor of the type having an inertia sensitive actuator with an actuator pawl engageable with a spur gear which rotates with a toothed sprocket, said actuator pawl further engageable with a locking bar which cooperates with said toothed sprocket to selectively inhibit withdrawal of said seat belt webbing, the improvement comprising;

a spur gear and toothed sprocket assembly wherein said toothed sprocket defines a plurality of apertures and wherein a portion of each tooth of said spur gear is disposed in one of said apertures whereby said spur gear is in interlocking engagement with said toothed sprocket.

4,605,181

STRAND TENSION CONTROLLING APPARATUS

James L. Alexander, Charlotte, N.C., assignor to McCoy-Ellison, Inc., Monroe, N.C.

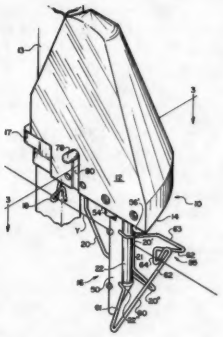
Filed Mar. 22, 1985, Ser. No. 714,724
Int. Cl.[4] B65H *59/24*
U.S. Cl. 242—149 **21 Claims**

1. Apparatus for controlling the tension in advancing strand material comprising:

a base;

strand tensioning means movably mounted on said base for variable engagement with said advancing strand for applying a variable frictional drag on said strand, said tensioning means including movable control means arranged for engagement with said strand for movement in response to tension fluctuations in said strand for decreasing and increasing the frictional drag applied thereto in relation to increases and decreases in the amount of tension in said strand to compensate for and offset tension fluctuations from a desired constant tension value, said strand tensioning means including two adjacent strand engaging surfaces aranged for strand travel therebetween, said surfaces being independently movable toward and away from surface engagement with one another for engaging said traveling strand therebetween to apply said frictional drag thereto;

means for independently biasing each said surface toward surface engagement with one another, said biasing means including means for urging one said surface into following relation with the other said surface for exerting a decreasing biasing force during movement of said other surface in the direction away from said one surface, for increasing and decreasing the frictional drag on said strand in direct relation to the movement of said other surface in the directions toward and away from said one surface, and said biasing means including means for applying a biasing force to said other surface at a predetermined varying rate



of change in direct relation to the degree of movement of said other surface toward and away from said one surface; and

guide means for directing said advancing strand in a path of travel in engagement with said strand tensioning means and in tensioned engagement with said control means;

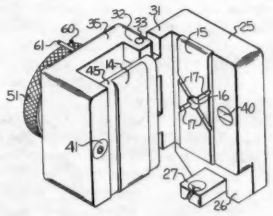
whereby fluctuations in the tension in said strand are controlled and the strand tension is maintained within a substantially uniform range.

4,605,182

YARN TENSION CONTROL DEVICE

Otto Zollinger, Spartanburg, S.C., assignor to Otto Zollinger, Inc., Spartanburg, S.C.

Filed Sep. 20, 1985, Ser. No. 778,303
Int. Cl.[4] B65H *59/22*
U.S. Cl. 242—149 **8 Claims**



1. A yarn tension control device for regulating and adjustably varying the tension placed on a running yarn being fed along a predetermined path of travel, said device including first and second plate members having adjacent inner faces positioned on opposite sides of the predetermined path of travel of the running yarn, means supporting said first and second plate members for relative movement toward and away from each other for selective movement of the inner faces of said plate members into and out of engagement with the running yarn, means for resiliently urging said plates toward each other to thereby apply tension to the running yarn passing therebetween, the inner face of said first plate member being

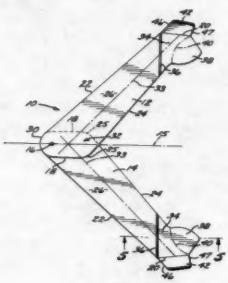
substantially flat and smooth and including parallel opposite side edges, and said second plate member including parallel opposite side edges aligned with said opposite side edges of said first plate member, and having an opening extending through the central portion thereof, said inner face of said second plate member having shallow grooves therein, said shallow grooves including inner and outer ends and extending radially outwardly from said opening, said inner ends of said shallow grooves being communicatively connected with said opening, and said outer ends of said shallow grooves being communicatively connected with said opposite side edges of said second plate member, said opening and said grooves cooperating to provide passageways for the passage of air and for the escape of lint from between said first and second plate members.

4,605,183

SWING WING GLIDER

Albert L. Gabriel, 135 W. Mission Ave., Suite 211, Escondido, Calif. 92025

Filed Mar. 22, 1984, Ser. No. 592,348
Int. Cl.[4] B64C *3/40*
U.S. Cl. 244—46 **34 Claims**



1. A glider which comprises:

a pair of elongated, generally flat wings having forward, inner root portions that are freely pivotally interconnected,

each of said wings extending rearwardly and outwardly from its said root portion to an outer tip portion, and

tailfin means on each of said wings rearwardly and outwardly spaced from overlapped portions,

each of said tailfin means having a component that is vertical to the general horizontal plane of its respective wing and is angularly offset from a trailing edge to a leading edge forwardly and outwardly from the general longitudinal axis of its respective wing,

said angular offset causing said vertical components to each have an airfoil liftout angle of attack to the relative wind during flight which causes said wings to swing out to an extended best glide configuration,

said wings being freely automatically pivotally adjustable during flight in a range of movement between said extended best glide configuration and a substantially more retracted configuration under the opposing influences of aerodynamic liftout forces on said tailfin means urging said wings toward a more extended configuration and drag forces on said wings and tailfin means urging said wings toward a more retracted configuration,

the ratio of said liftout forces to said drag forces being greatest and said wings being automatically extended to said best glide configuration at substantially the best glide speed of said glider, and said ratio being reduced and said wings being automatically retracted from said best glide configuration at speeds both higher and lower than said best glide speed,

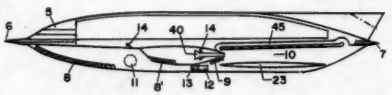
said wing retraction at said higher speeds providing reduced lift and corresponding greater flight efficiency for such higher speeds, and said wing retraction at said lower speeds providing reduced lift causing said forward wing portions to drop and the speed of said glider to increase toward its said best glide speed.

4,605,184

AERODYNAMIC HEATED STEAM GENERATING APPARATUS

Kyusik Kim, 5026 Rhoads Ave., Santa Barbara, Calif. 93111

Filed Jul. 13, 1983, Ser. No. 513,179
Int. Cl.[4] B64D *41/00*
U.S. Cl. 244—58 **6 Claims**



1. An aerodynamic heated steam generating apparatus comprising

an aerodynamic heat immersion coil steam generator adapted to be located on the leading edge of an airframe of a hypersonic aircraft and being responsive to aerodynamic heating of water by a compression shock airstream to produce steam pressure;

an expansion shock air-cooled condensor adapted to be located in the airframe rearward of and operatively coupled to the aerodynamic heat immersion coil steam generator to receive and condense the steam pressure; and

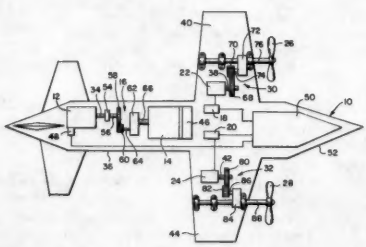
an aerodynamic heated steam injector manifold adapted to distribute heated steam into the airstream flowing through an exterior generating channel of an air-breathing, ducted power plant.

4,605,185

AIRPLANE POWERED BY VEHICULAR MOTOR

Daniel Reyes, 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed Oct. 17, 1983, Ser. No. 542,461
Int. Cl.[4] B64D *35/00*
U.S. Cl. 244—60 **1 Claim**



1. A motor generator powered airplane which comprises:

(a) an internal combustion engine having a drive shaft, said engine mounted in the tail of the fuselage of the airplane;

(b) an electric generator mounted within the fuselage of the airplane;

(c) means for driving said generator from said engine;

(d) two transformers mounted symmetrically within the fuselage of the airplane in alignment with the wings, each said transformer electrically connected to said generator;

(e) two electric motors, each said motor having a drive shaft, mounted symmetrically within a wing of the airplane and electrically connected to one said transformer;

(f) two propellers, each said propeller rotatably mounted

symmetrically to a wing of the airplane, parallel to each motor;

(g) a starter mounted to said engine;

(h) a pilot's instrument panel in a cockpit of the airplane electrically connected to said starter and said transformer so that the pilot can start and stop said engine and control speed of said propellers when needed, wherein said means for driving said generator from said engine comprises:

(i) a pulley having a pulley shaft and a large spur gear, said pulley attached to the drive shaft to said engine;

(j) a small spur gear driven by the large spur gear;

(k) a multi gear box having an inlet gear shaft and an outlet gear shaft, the inlet gear shaft attached to said small spur gear and the outlet gear shaft driving said generator, wherein said means for driving each said propeller from said motor comprises:

(l) a large spur gear attached to the drive shaft of said motor;

(m) a small spur gear driven by said large spur gear; and

(n) a multi gear box having an inlet gear shaft and an outlet gear shaft, the inlet gear shaft attached to said small spur gear and the outlet gear shaft driving said propeller, wherein said multi gear box comprises:

(o) a first spur gear mounted to the inlet gear shaft;

(p) a first pinion and second spur gear rotatably mounted within said gear box, said first pinion driven by said first spur gear; and

(q) a second pinion mounted to the outlet gear shaft, and second pinion driven by said second spur gear.

4,605,186

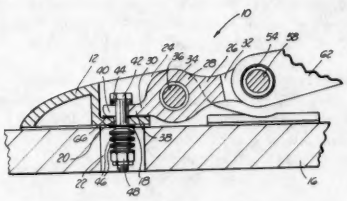
VIBRATION ISOLATION DEVICE USED WITH A JET ENGINE THRUST REVERSER UNIT

James A. Fernz, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 16, 1984, Ser. No. 580,796

Int. Cl.[4] B64D *33/00*

U.S. Cl. 244—110 B **4 Claims**



1. A vibration isolation device for connection to a mounting structure and a drag arm of a blocker door assembly used in a jet engine thrust reverser unit, the device comprising:

a fitting adapted for attachment to the mounting structure, the fitting having an aperture with a guide bushing therein and a mounting bracket adjacent the aperture;

a pivot link, pivotally mounted on the mounting bracket, one end of the link having a tongue connected to a spring-biased bolt, the bolt including a plurality of belleville washers and a threaded nut for adjusting the spring pressure to a pre-determined load when engaging the tongue of the pivot link, the bolt received in the aperture of the fitting, the other end of the pivot link pivotally attached to the drag arm; and

a wear plate mounted on top of the fitting and adjacent the tongue of the pivot link for engaging the bottom of the tongue when the link is rotated in counterclockwise direction thereon, the drag arm, when moved from a normal operating position to an over-extended position rotates the pivot link in the counterclockwise position raising the tongue above the wear plate and compressing the belleville washers.

4,605,187

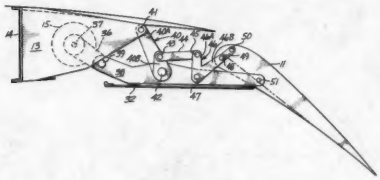
WING FLAP MECHANISM

Martin F. Stephenson, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 9, 1984, Ser. No. 588,161

Int. Cl.[4] B64C *9/18*

U.S. Cl. 244—216 **7 Claims**



1. A carrier unit for chordwise extending and rotatably positioning an auxiliary airfoil mounted adjacent to the trailing edge of a relatively fixed main airfoil of an airplane, comprising: a pair of structural rib members spaced apart spanwise and extending chordwise within said main airfoil; said carrier unit being supportably mounted between said pair of rib members and comprising: three sets of four-bar linkages arranged in a chordwise integrated series relative to said main airfoil; said first set of four-bar linkages being arranged symmetrically about a fore-and-aft support centerline within said carrier unit for producing a chordwise translational movement of said auxiliary airfoil relative to said main airfoil, such that said auxiliary airfoil is extended to provide a substantial aerodynamic slot, for the through flow of air, between the trailing edge of said main airfoil and the leading edge of said auxiliary airfoil; said second set of four-bar linkages being arranged in a fore-and-aft series alignment with said first set of four-bar linkages for producing a rotational movement of said auxiliary airfoil, about a spanwise axis, to change the angle-of-incidence of said auxiliary airfoil relative to said main airfoil; and said third set of four-bar linkages forming a direct interconnection between said first and second sets of four-bar linkages for synchronization of extension actuation in combination with programming control of angle-of-incidence of said auxiliary airfoil relative to said main airfoil, from an undeflected retracted position to an extended position to form an aerodynamic slot and a deflected position whereat said auxiliary airfoil has its chord plane deflection angle increased relative to a chord reference plane of said main airfoil, for takeoff and landing operation of the airplane.

4,605,188

APPARATUS FOR SEATING A TERMINAL OR SIMILAR OFFICE EQUIPMENT

Werner Goetz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/DE84/00029, § 371 Date Aug. 15, 1984, § 102(e) Date Aug. 15, 1984, PCT Pub. No. WO84/03134, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 3, 1984, Ser. No. 642,678

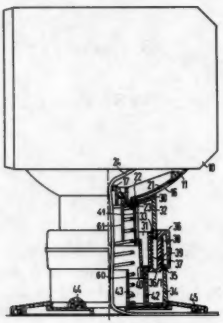
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304217

Int. Cl.[4] F16M *11/00*

U.S. Cl. 248—157 **15 Claims**

1. Apparatus for mounting a computer terminal (10) or similar office equipment, comprising an upper cap member (32) to which the terminal is connected and having a first threaded stud (33) extending downwardly therefrom, a lower base member (34) which has a second threaded stud (35) extending upwardly therefrom, a central adjustment member (36) which has a threaded portion (36/1) which has first threads (37)

which mate with the first threaded stud (33) and second threads (38) which mate with the second threaded stud (35), and the threads (37, 38) are formed in the opposite direction relative to each other, said central adjustment member having an externally disposed gripping portion (39) which is connected to the threaded member (36), so that a telescope-like displacement of the cap member (32) relative to the base member (34) occurs when the threaded member (36) is turned with the gripping portion (39), and an anti-twist element (40) slidably connects the cap member (32) to the base member (34) to prevent them from twisting relative to each other, and wherein a spring element (43) for partially supporting the weight of the terminal is mounted between said cap member (32) and said base member (34).

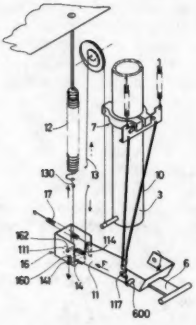


4,605,189

ANTI-FAIL DEVICE FOR LOCKING A DRAWING-BOARD PILLAR AGAINST MOTION

Alain Bruneau, Montferrand le Chateau, France, assignor to Alpia S.A., Besancon, France

Filed Aug. 16, 1984, Ser. No. 641,499
Claims priority, application France, Sep. 7, 1983, 83 14564
Int. Cl.[4] F16M *11/00*
U.S. Cl. 248—162.1 **5 Claims**



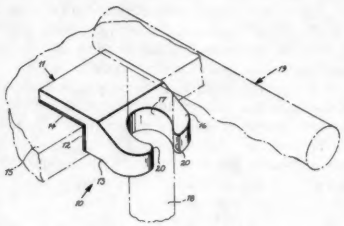
1. A drawing board construction comprising a frame structure including a base, a vertical pillar guided by said frame structure for movement vertically relative to said frame structure, a drawing board proper pivotally mounted on said pillar, means for counterbalancing the weight of said pillar and drawing board proper, said counterbalancing means comprising a pulley rotatably supported by said frame structure, a cable passing over said pulley and attached to said pillar and spring means for tensioning said cable, spring actuated locking means for frictionally gripping said pillar to hold it in selected position, user actuated means for releasing said locking means to permit movement of said pillar relative to said frame structure, said releasing means comprising a foot pedal pivotally mounted on said base and tension members connecting said foot pedal with said locking means, and safety means responsive to slackening or breaking of said cable for disconnecting said foot pedal from said tension members in the event of slackening or breaking of said cable, whereby said locking means cannot be released by operation of said foot pedal.

4,605,190

CANE KEEPER

Harry W. Kamp, 1552 Cornell Rd., Muskegon, Mich. 49441

Filed Dec. 10, 1984, Ser. No. 680,316
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—316.7 **1 Claim**



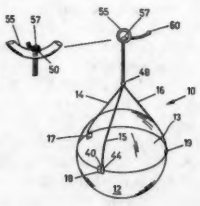
1. A cane keeper, comprising, in combination, a main body made of a resilient plastic material, a right angle shaped cut-out along a rear lower portion of said main body for fitting around a right angle corner of a supporting object, a top wall of said main body being horizontally flat at its rearward portion and being angularly, donwardly forwardly inclined at its front portion, an upper side of said cut-out being parallel with said rearward portion of said main body top wall and a forward side of said cut-out being downwardly perpendicular, a pair of adhesive pads at right angle to each other, one said pad lining each said side of said cut-out for adhering to a top surface and a side surface of said supporting object, and a generally circular notch on a front wall of said main body having a narrowed front entry for a vertical cane being slidably received therethrough and into said notch.

4,605,191

SUSPENDABLE DISPLAY RECEPTACLE

Michael Kagan, 116 Viceroy Rd., Bldg. B, Unit #9, Concord, Ontario, Canada

Continuation-in-part of Ser. No. 126,663, Mar. 3, 1980, abandoned. This application Jun. 12, 1984, Ser. No. 620,084
Int. Cl.[4] A47H *1/10*
U.S. Cl. 248—318 **15 Claims**



1. A display receptacle carrying a plurality of tabulate bodies or relatively thin projections on a surface of the display

receptacle proximate the rim thereof for securing strands having enlarged ends, each tabulate body or relatively thin protrusion presenting a face on the side of the body remote the surface of the receptacle and presenting a slot, intermediate the body's or protrusion's width, opening through the face along its length from the top of the protrusion and extending downwardly, the slot carrying a wider slot portion or socket at the upper end thereof also opening through the face, each tabulate body or protrusion carrying another channel, slot or groove into which the first mentioned slot opens and which channel, slot or groove extends in a curved path to the top of the body or protrusion at a position spaced from the wider slot Portion or socket, the channel, slot, or groove comprising means for restricting a portion of the opening of the channel, slot or groove, to require flexture of a filament strand when it is pushed into the channel, slot or groove to thereby allow the strand to seat and be held in the channel, slot or groove during use in the suspension of the receptacle.

4,605,192

SEAT RAIL

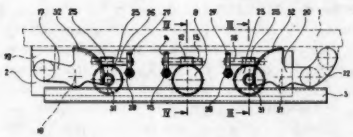
Bernd Klüting, Radevormwald; Peter Ebeling, Remscheid, and Willibald Strowik, Remscheid-lennep, all of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Division of Ser. No. 503,552, Jun. 13, 1983, Pat. No. 4,530,481. This application Jun. 4, 1985, Ser. No. 728,024

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3221959

Int. Cl.[4] A45D *19/04*

U.S. Cl. 248—394 **7 Claims**



1. A seat rail for vehicle seats, particularly for motor vehicle seats, comprising:

an adjustment device for adjusting the position of said seat rail;

said seat rail being formed as a housing;

said housing enclosing at least one drive element of said seat adjustment device and having a slide rail formed on said seat rail, said slide rail being longitudinally movable in said guide rail

said seat rail comprising two half shells, said half shells being joined to form a hollow casing, and the lower edge of each half shell forms half of the slide rail;

said half shells being one-piece sheet metal elements;

said half shells being connected to each other along their upper edges;

said seat rail further comprising a large diameter spur gear mounted between two smaller diameter spur gears, said smaller diameter spur gears being adapted for engagement with two spur racks mounted on said guide rail, said larger diameter spur gear being mounted within and extending below the two half shells, and being in engagement with a driving element, said driving element being arranged inside the seat rail and formed as a worm;

wherein at least one spur gear is arranged in the vicinity of the laterally projecting surface areas of the seat rail, said one spur gear having a rotational axis forming an acute angle with the longitudinal axis of the seat rail, said seat rail having an opening in one of its side walls, said opening being aligned with one end of the shaft supporting said one spur gear;

a locking element and a pivot lever, said pivot lever lying partially inside said seat rail and being pivotably mounted therein, and said locking element being movably mounted inside the seat rail, whereby when said locking element is in its locking position, it is in form-fitting engagement with the pivot lever.

4,605,193

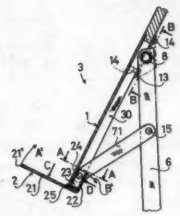
FOLDABLE MUSIC STAND

Pertti K. Kuparinen, Haavikonkuja 3, SF-78210 Varkaus, Finland

Filed Nov. 9, 1984, Ser. No. 670,348

Int. Cl.[4] A47B *97/04*

U.S. Cl. 248—460 **7 Claims**



1. A foldable stand comprising:

a vertical shaft;

a back member pivotally mounted to one end of said vertical shaft and having an operating position inclined with respect to an axis of said shaft and a transport position parallel to the axis of said shaft;

a shelf pivotally mounted to a lower end of said back member, said shelf having a first leg and a second leg extending at an angle to said first leg;

a fixed support part connected to said shaft at an opposite end thereof opposite from said back member and extending in a plane containing said back member with said back member in its transport position, a movable support part movably connected to said shaft at its opposite end and having a support position extending substantially perpendicularly to said fixed support part, and a transport position extending parallel to said fixed support part; and

a lever having one end pivotally mounted to said second leg of said shelf and an opposite end pivotally mounted to said shaft, said lever being pivotally mounted to said second leg of said shelf at a location so that movement of said back member into its open position causes said lever to rotate said shelf into a use position with said first leg extending at an angle to said back member, and with said back member moved into its transport position, said lever pivoting said shelf into a transport position with said first leg extending parallel to said back member.

4,605,194

HIGH-PERFORMANCE VIBRATION FILTER

Gerd Binnig, Richterswil; Christoph Gerber, Adliswil; Heinrich Rohrer, Richterswil, and Edmund Weibel, Adliswil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,533

Claims priority, application European Pat. Off., Aug. 13, 1982, 82107380.6

Int. Cl.[4] F16M *13/00*

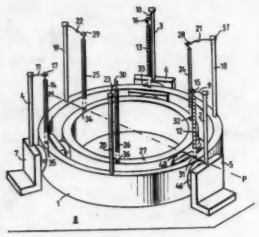
U.S. Cl. 248—559 **10 Claims**

1. In a vibration-free mechanical support system including a mechanical vibration filter for providing vibration-free mechanical support,

said system employing elastic elements to connect a suspended mass to a base element,

the improvement comprising employing a plurality of said elastic elements to support said mass, with a series of said elastic elements connected in a series,

with each of said elastic elements connected in a series having a different resonant frequency from each other in order to minimize coupling of vibration from one of said



elastic elements connected in a series and supporting said suspended element through another of said elastic elements connected in said series,

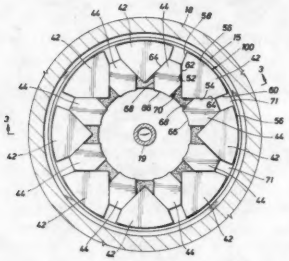
whereby vibration of said mass is minimized.

4,605,195

ANNULAR BLOWOUT PREVENTER PACKING UNIT

James A. Burton, Houston; Kenneth W. Colvin, Humble, and Julian D. Keithahn, Houston, all of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed May 1, 1985, Ser. No. 729,179
Int. Cl.[4] E21B *33/06*
U.S. Cl. 251—1.2 **15 Claims**



1. An annular blowout preventer packer unit having a longitudinal axis and adapted to be compressed radially inwardly from a relaxed state to a closing state comprising,

an annulus of elastomeric material,

metallic drive inserts embedded in said elastomeric material generally circularly about said axis, each of said drive inserts having a web which extends generally longitudinally and having a top plate with two longitudinal forward surfaces and a longitudinal back surface, said two longitudinal forward surfaces being equally inclined with respect to a longitudinal plane along a radius through the center of the drive insert,

lead inserts embedded in said elastomeric material generally circularly about said axis, each of said inserts having a web which extends generally longitudinally and having a top plate with two longitudinal rearward surfaces and a longitudinal forward surface, said two longitudinal rearward surfaces being equally inclined with respect to a longitudinal plane through a radius through the center of the lead insert, and

said drive inserts and said lead inserts being arranged with respect to each other so that at least partial engagement exists between each forward surface of the top plate of a drive insert and a corresponding rearward surface of the top plate of an adjacent lead insert in the relaxed state of the packer unit.

15. An annular blowout preventer packer unit having a longitudinal axis and adapted to be compressed radially inwardly from a relaxed state to a closing state comprising,

an annulus of elastomeric material,

metallic drive inserts embedded in said elastomeric material generally circularly about said axis, each of said drive inserts having a web which extend generally longitudinally and having a top plate with two longitudinal forward surfaces and a longitudinal back surface, said two longitudinal forward surfaces being equally inclined with respect to a longitudinal plane along a radius through the center of the drive insert,

said drive inserts having a bottom plate with two longitudinal forward surfaces, said two longitudinal forward surfaces being equally inclined with respect to the longitudinal plane along the radius through the center of the drive insert,

lead inserts embedded in said elastomeric material generally circularly about said axis, each of said inserts having a web which extends generally longitudinally and having a top plate with two longitudinal rearward surfaces and a longitudinal forward surface, said two longitudinal rearward surfaces being equally inclined with respect to a longitudinal plane through a radius through the center of the lead insert,

said lead inserts having a bottom plate with two longitudinal rearward surfaces and a longitudinal forward surface, said two longitudinal rearward surfaces being equally inclined with respect to the longitudinal plane through the radius through the center of the lead insert, and

said drive inserts and said lead inserts being arranged with respect to one another so that at least partial engagement exists between each forward surface of the top plate of a drive insert and a corresponding rearward surface of the top plate of an adjacent lead insert in the relaxed state of the packer unit and partial engagement exists between each forward surface of the bottom plate of the drive insert and a corresponding rearward surface of the bottom plate of an adjacent lead insert in the relaxed state of the packer unit.

4,605,196

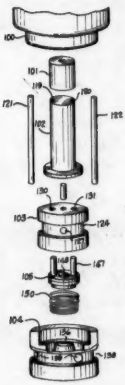
SOLENOID OPERATED VALVE

Allen J. Moffat, Wilmington, and Tom Ours, Xenia, both of Ohio, assignors to Airmatic-Allied, Inc., Wilmington, Ohio

Filed Jun. 21, 1984, Ser. No. 623,099
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—84 **6 Claims**

1. An improvement for a solenoid operated valve having two pins operatively connecting a valve operating mechanism with a valve seal, the two pins having an axis and being in containment cavities, connected to the valve seal, the improvement comprising the two pins being split in a direction generally perpendicular to their respective axis into actuation pins and guide legs, the effective diameter of the containment cavities being reduced surrounding said guide legs, said guide legs

guiding the valve seal, and said actuating pins transferring the valve operating forces between the valve operating mechanism



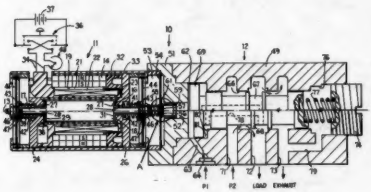
and said guide legs, said split separating the actuating function of the pins from the guiding function of the pins.

4,605,197

PROPORTIONAL AND LATCHING PRESSURE CONTROL DEVICE

Gerald F. Casey, and Richard A. Schultz, both of Portage, Mich., assignors to Fema Corporation, Kalamazoo, Mich.

Filed Jan. 18, 1985, Ser. No. 692,586
Int. Cl.[4] F16K *31/42*
U.S. Cl. 251—30.01 **6 Claims**



1. A proportional pressure control device, comprising:

a motor having a housing and a reciprocally movable armature therein movable between first and second limits;

a valve body secured to said housing;

a plate-like poppet valve member on at least one end of said armature, said plate-like poppet valve member having a flat surface thereon oriented in a plane that extends perpendicular to the direction of movement of said armature and on a side thereof remote from said one end of said armature;

means defining a fluid pressure port in said valve body adapted to be connected to a fluid pressure source, said pressure port extending into the interior of said valve body to further means defining a chamber;

wherein a flow restrictor means is provided in said pressure port to restrict fluid flow from a pressure source into said pressure port and said chamber;

nozzle outlet means in said chamber having an annular flat valve seat thereon directly opposing said plate-like poppet valve member, the spacing between said valve seat and said valve member controlling the magnitude of the fluid pressure in said chamber;

means for preventing a magnetic holding of said armature at said first limit position;

means for effecting a movement of said armature in a manner that is substantially proportionally related to a variable current signal between a position of said armature at said first limit position and a position of said one side of said plate-like poppet valve member whereat it engages said flat valve seat;

magnetic latching means for releasably magnetically holding said armature in at least said second limit position, said plate-like poppet valve member engaging said valve seat and restricting fluid flow out of said nozzle outlet means when said armature is magnetically held in said second limit position as well as oriented a finite distance away from said second limit position whereat said armature is free of said magnetic latching means and said poppet valve member engages said valve seat; and

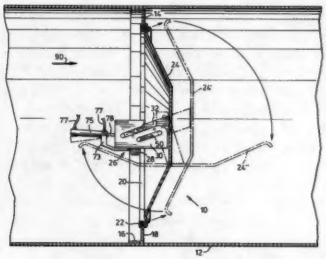
compensating means coupled between said plate-like poppet valve member and said armature for compensating for a continued movement of said armature from said finite distance away from said second limit position toward said second limit position following an engagement of said plate-like poppet valve member with said valve seat.

4,605,198

DAMPER CONSTRUCTION

Waldemar H. Greiner, Hamilton, Canada, assignor to Seal-Air Control Systems Inc., Downsview, Canada

Filed Feb. 14, 1985, Ser. No. 701,990
Claims priority, application Canada, Jan. 28, 1985, 473012
Int. Cl.[4] F16K *31/12*
U.S. Cl. 251—58 **7 Claims**



1. A damper for controlling fluid flow, comprising:

a frame having an opening through which fluid is intended to flow when the damper is open,

a closure member movable between a first position in which it blocks said opening, and a second position in which the opening is unblocked and the closure member is rotated with respect to its first position, so as to minimize its interference with fluid flow through said opening, and;

mechanism for controlling movement of said closure member, the mechanism including:

(a) a first and a second bracket fixed with respect to the frame and the closure member, respectively,

(b) an elongate guideway defined by one bracket and registry means defined by the other bracket, the registry means being movably captive within said elongate guideway,

(c) stabilizing track means on the brackets spaced from said guideway and registry means, the stabilizing track means requiring the second bracket (1) to substantially retain a given angular orientation with respect to the first bracket while the registry means slides from a first end to a second end of said elongate guideway thus moving said closure member in translation with respect to said frame, and (2) to rotate with respect to said first bracket about said second end of said elongate guideway thus moving said closure member in rotation with respect to said frame when said second bracket is disposed exteriorly of said first bracket; and

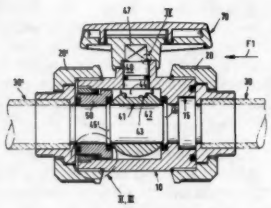
(d) power means to positively move the brackets with respect to each other.

4,605,199

BALL VALVE PROVIDED WITH A LOCK RING

Giancarlo Bonissone, and Piero Mulas, both of Genoa, Italy, assignors to F.I.P. Formatura Iniezione Polimeri, S.p.A., Sori, Italy

Filed Sep. 12, 1984, Ser. No. 649,891
Claims priority, application Italy, Oct. 4, 1983, 15261/83[U]
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—171 **2 Claims**



1. A ball valve comprising a valve body having an axial through bore open at opposite ends thereof and a radial passage radially of the bore and in communication with the bore, a valve stem extending axially in said radial passage and outwardly of the valve body, a rotatable ball in the bore connected to said valve stem for selective operation thereof, the ball having a diametrical passageway positionable selectively in communication with said valve body bore by selective manipulation of said valve stem for opening and closing the ball valve, said valve body having opposite ends externally threaded, two internally threaded external lock rings each removably threaded on a respective one of said externally threaded ends, two end bushings each disposed internally of a corresponding lock ring for each receiving an end of a respective pipe for connection in use to the valve body, the valve body having an annular internal flange extending inwardly and disposed coaxial with said bore inwardly of one of said end bushings, a ring seal disposed between said flange and said ball, an internal bushing internally of the valve body held inwardly by the end bushing at an end remote from said internal flange, a second ring seal disposed between the internal bushing and the ball, an internal lock ring in said axial bore circumferentially of an axial part of the internal bushing threaded onto an internal thread of the valve body at said end remote from the internal flange, and an elastic O-ring in said axial bore circumferentially of the internal bushing disposed for effecting a seal between the internal lock ring, said internal bushing, and surfaces of the valve body defining said axial bore of the valve body.

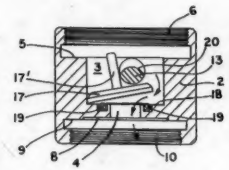
4,605,200

FAUCET VALVE

Robert Huppee, 1910 Thierry Street, Brossard, Canada (J4W 2M8)

Filed Apr. 2, 1984, Ser. No. 595,656
Claims priority, application Canada, Mar. 28, 1984, 450672
Int. Cl.⁴ F16K *31/524*
U.S. Cl. 251—258 **5 Claims**

1. A shut-off valve comprising a tubular valve body, having a larger diameter upstream bore defining an inlet and a smaller diameter downstream bore centrally communicating with said upstream bore and defining an outlet and an upstream facing annular valve seat, a valve member including a disc-shape valve plug of a diameter intermediate the diameters of said upstream and downstream bores, and formed with an upstream projecting axial pin, said valve member entirely located within said upstream bore and freely supported on said valve seat and movable between valve-opening and valve-closing positions, said valve plug having a downstream face facing said valve seat, one of said valve seat and said downstream face having a circular groove, an O-ring seal positioned and mechanically retained in said groove and making sealing contact with one of said downstream face and valve seat, respectively, in the valve-closing position of said valve member; an operant cylindrical shaft removably extending transversely of said valve body across and exposed within said upstream bore, said shaft lying in a plance parallel to the plane of said valve seat and laterelly offset from the longitudinal axis of said bores, said shaft having an end projecting from said tubular valve body and movable



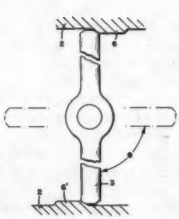
relative to said body and valve member by a force applied to said projecting end, means to releasably retain said shaft in said valve body, sealing means between said shaft and said valve body at both sides of said upstream bore, said shaft having a central portion of reduced diameter, defining a cam surface merging with the full diameter surface of said shaft, said cam surface and said full diameter shaft surface selectively (engageable with) slidably contacting said (valve member) axial pin upon movement of said shaft in said valve body to permit said valve member to take its valve-closing position under liquid pressure and to tilt said valve plug on its valve seat to valve-opening position respectively.

4,605,201

BUTTERFLY VALVE

Tadao Miyazaki, Shiga, Japan, assignor to Okumura Engineering Works Co., Ltd., Shiga, Japan

Continuation of Ser. No. 35,898, May 3, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,804
Int. Cl.⁴ F16K *1/22*
U.S. Cl. 251—305 **2 Claims**



1. A butterfly valve comprising a valve casing; a seat ring provided in the valve casing and having a pair of semi-circular sealing projections; and a disc rotatably provided in the valve casing forming a seal with the ring, wherein said disc is provided with a taper in circumference thereof, said semi-circular sealing projections are provided with sloping side surfaces which engage respectively with one side and another side of said taper of said disc and a tilt angle of said taper is smaller than a sloping angle of said sloping side surfaces of said sealing projections taken with respect to a plane parallel to a direct of flow through said valve.

4,605,202
BALL VALVE

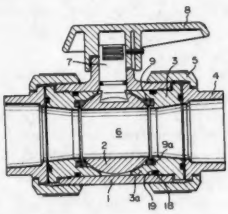
Kazuhiko Tsuno, and Nitiro Sano, both of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Miyazaki, Japan

Filed Oct. 2, 1984, Ser. No. 656,882

Claims priority, application Japan, Oct. 28, 1983, 58-166050[U]; Dec. 8, 1983, 58-188583[U]; Jul. 23, 1984, 59-110209[U]

Int. Cl.⁴ F16K *5/06*

U.S. Cl. 251—315 **6 Claims**



1. A ball valve for controlling liquid flow, comprising a tubular valve body, a ball rotatably mounted inside of said valve body and provided with a central through channel, a union positioned in each end of said valve body so as to be in slidable contact with said ball via a seat, and a body cap connected to each outer end of said union with a packing ring intervening therebetween for providing a water-tight seal, said union and said body cap having opposed end surfaces, said packing ring being accommodated in an annular groove recessed on at least one of said opposed end surface, said body cap being secured to said union by a cap nut engaged with a circumference of said valve body, whereby liquid flow passing through the valve is controlled by rotating said ball so that the direction of the channel of said ball is varied from a direction aligned with a longitudinal axis of said valve body to a direction perpendicular to said axis of said valve body, said union having, at the inner end thereof, an annular projection substantially filling an annular cavity between an inner wall of said valve body and an outer surface of said ball, said packing ring having the same inner diameter as that of said union and is provided with an annular rib to be accommodated into the entire length of said annular groove, said ball valve including a valve stem connected to said ball, said valve stem extending outwardly through said valve body, a portion of each annular projection located adjacent said stem when said channel is aligned with said axis.

4,605,203
PNEUMATIC JACK

Jack L. Hooper, and Harold E. Radiel, both of 108 Cummings Ct., Antioch, Tenn. 37013

Filed Mar. 4, 1985, Ser. No. 707,962

Int. Cl.⁴ B66F *3/24*

U.S. Cl. 254—93 HP **11 Claims**

1. A pneumatic jack comprising:

(a) a base member having a vertical central axis and adapted to rest upon a supporting surface,

(b) an annular, closed, flexible wall member having a longitudinal axis, a bottom portion and a top portion, and enclosing an expansible air chamber,

(c) means connecting the bottom portion of said annular wall member to said base member,

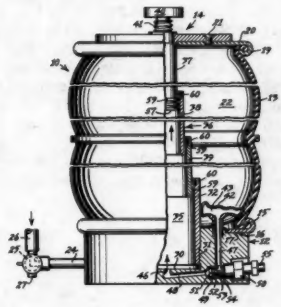
(d) a jack head member secured to the upper portion of said annular wall member,

(e) inlet means communicating with said air chamber for introducing compressed air into said air chamber for elevating said jack head,

(f) an extensible plunger member fixed to said jack head and adapted to support a vertically expanding and contracting column of hydraulic fluid,

(g) an expansible and contractible fluid reservoir adapted to receive hydraulic fluid and having a hydraulic fluid outlet opening,

(h) check valve means in fluid communication between said fluid outlet opening and said plunger member to normally



permit the flow of hydraulic fluid only from said reservoir to said plunger member when the hydraulic pressure in said reservoir exceeds the hydraulic pressure in said plunger member by a predetermined value,

(i) relief means for permitting flow of hydraulic fluid from said plunger member into said reservoir, and

(j) means for releasing the air pressure within said air chamber.

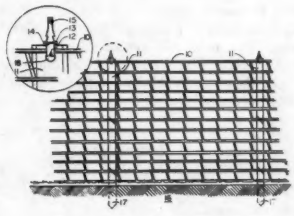
4,605,204
COLLAPSIBLE RECREATIONAL FENCE

Donald W. Schmanski, and Scott Landis, both of Carson City, Nev., assignors to Carsonite International Corporation, Carson City, Nev.

Filed Aug. 13, 1984, Ser. No. 639,629

Int. Cl.⁴ E04H *17/14*

U.S. Cl. 256—19 **7 Claims**



1. A collapsible fence structure specifically adapted for use in recreational applications such as baseball outfield fencing, crowd control in recreational areas and playground fencing, said fence structure comprising:

a substantial length of flexible, resilient, plastic fence mesh capable of supporting a person when such person falls against the mesh in its vertical orientation;

at least two fiber-reinforced plastic support posts characterized in that each post has concurrent driveability and flexibility characteristics wherein the product of EI (E=elastic modulus; I=moment of inertia) for the post is chosen such that it withstands buckling loads applied at the top of the post by a post driver during installation and that it establishes elastic character in an exposed section of the post to permit non-destructive deflection of the post upon impact by a moving object and subsequent immediate restoration to an original, upright condition;

means for attaching the mesh to the plastic posts to form a unified fence structure which is maintained in vertical orientation by the support post except under conditions of impact, whereupon the mesh and support post deflect and allow the impacting body to pass over the fence, said fence structure thereafter being restored to its vertical orientation by the support post.

4,605,205

ARRANGEMENT COMPRISING A GASIFIER AND A DIRECT REDUCTION FURNACE

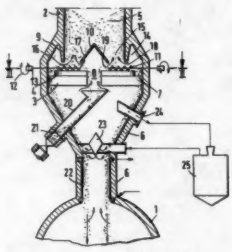
Klaus Langner, Meerbusch-Osterath; Gero Papst, Kaarst; Rolf Hauk, Achern, all of Fed. Rep. of Germany, and Michael Nagl, Linz, Austria, assignors to Korf Engineering GmbH, Dusseldorf, Fed. Rep. of Germany and Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 11, 1985, Ser. No. 743,640

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3422185

Int. Cl.[4] F27B *9/38*

U.S. Cl. 266—160 **17 Claims**



1. A combined melting gasifier and a direct reduction shaft furnace structure for reducing lumpy iron ore or iron oxide pellets, comprising a base adapted to support a charging column of ore in the shaft furnace, at least one discharge port being formed in the base for discharging sponge iron particles produced by reduction of said ore and at least one annular intake being formed in said shaft furnace to convey the reduction gas supplied by the gasifier to the charge in the lower part of the charging column, and mechanical means disposed at the base of said shaft furnace for causing the continuous reciprocal movement of the reduced charge particles in an area adjacent said annular intake for the reduction gas.

4,605,206

SUSPENDED SEAL RING FOR LADLE PREHEATER

Mack A. Hounsel, Houston, Tex., assignor to J T Thorpe Company, Houston, Tex.

Continuation-in-part of Ser. No. 564,745, Dec. 21, 1983, Pat. No. 4,492,382. This application Oct. 29, 1984, Ser. No. 665,938

The portion of the term of this patent subsequent to Jan. 2, 2002, has been disclaimed.

Int. Cl.[4] F27D *1/18*

U.S. Cl. 266—283 **17 Claims**

1. An apparatus for sealing the rim of a ladle as it is positioned adjacent a primary insulative lining for a ladle preheater, comprising:

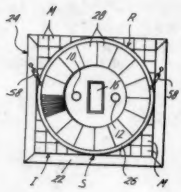
(a) a plurality of seal ring modules, each of said modules comprising:

(1) a plurality of adjacent layers of refractory ceramic fiber insulating material;

(2) said layers further having a side surface portion adapted to be contacted by the rim of the ladle during preheating of the ladle;

(3) said layers further being mounted in planes extending radially outwardly from a central portion of the ladle;

(b) support ring means for mounting said plurality of refractory fiber ring insulation units adjacent the primary insulative lining of the preheater; and



(c) means for mounting said support ring means with the ladle preheater, said means for mounting further permitting relative movement between the primary insulative lining and said support ring and modules.

4,605,207

FLUID-FILLED RESILIENT BUSHING

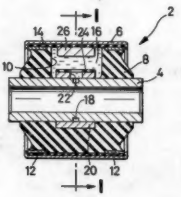
Keizo Konishi, Nagoya, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Aug. 9, 1984, Ser. No. 639,674

Claims priority, application Japan, Aug. 27, 1983, 58-156772

Int. Cl.[4] F16M *1/00;* **B60G** *11/18*

U.S. Cl. 267—57.1 R **11 Claims**



1. A fluid-filled resilient bushing structure wherein a resilient member is interposed between an inner sleeve and an outer sleeve disposed radially outwardly of the inner sleeve with a predetermined radial distance therebetween, said resilient member having portions at least partially defining plural fluid chambers which are filled with an incompressible fluid and held in communication with each other through an orifice, said resilient bushing structure comprising:

a movable radial stop member of a rigid material accommodated in at least one of said plural fluid chambers and movable relative to a pair of circumferential surfaces which partially define said at least one fluid chamber and which are opposed to each other in a radial direction of said inner and outer sleeves, said radial stop member being abuttable on said circumferential surfaces, and thereby preventing an excessive displacement of said inner and outer sleeves relative to each other in the radial direction thereof perpendicular to axes of the inner and outer sleeves.

4,605,208

COMBINATION AUTOMATIC AND MANUAL VISE APPARATUS

Randy E. Durham, 307 N. Magnolia, Woodville, Tex. 75979

Filed Apr. 4, 1985, Ser. No. 719,981

Int. Cl.[4] B23Q *3/08*

U.S. Cl. 269—32 **16 Claims**

1. A combination automatic and manual vise apparatus, comprising:

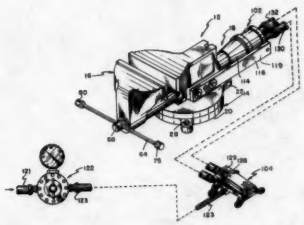
(a) a main support base assembly connectable to a support surface to hold same against movement;

(b) a manual vise assembly connected to said main support base assembly;

(c) said manual vise assembly includes (1) a stationary jaw assembly; (2) a movable jaw assembly mounted on said stationary jaw assembly for relative movement thereto; and (3) a vise actuator assembly engagable with said movable jaw assembly and operable to move said movable jaw assembly relative to said stationary jaw assembly;

(d) said vise actuator assembly having an actuator shaft assembly mounted within an actuator housing assembly;

(e) said actuator shaft assembly includes a shaft member which is selectively locked to the said actuator housing assembly for non-rotational movement or releasable therefrom for relative rotation thereto;



(f) an automatic vise assembly operably connected to the manual vise assembly having an automatic actuator assembly selectively operable through a power drive assembly; and

(g) said automatic actuator assembly included an actuator sleeve assembly engagable with said shaft member and selectively operable to be locked against rotation or unlocked for rotational movement;

whereby said actuator sleeve member when in a locked condition permits said shaft member when in the unlocked condition to rotate and move the movable jaw assembly in a manual mode operation relative to said stationary jaw assembly.

4,605,209

LONGITUDINAL FOLDING APPARATUS FOR TRAVELING WEBS, PARTICULARLY PAPER WEBS RECEIVED FROM A ROTARY PRINTING MACHINE

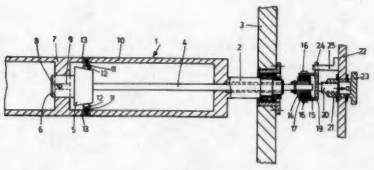
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,734

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404551

Int. Cl.[4] B41L *1/30*

U.S. Cl. 270—40 **19 Claims**



1. Longitudinal folding apparatus for folding a plurality of unperforated superposed webs **(29)** over a folding or former funnel or triangle **(26)**, particularly printed paper webs, having

at least one paper engaging roller **(1, 27, 30, 31)** positioned for contact with the webs upon passage of the webs thereover;

engagement penetrating pins **(11, 34)** positionable on the periphery of the at least one paper engagement roller, the pins having a length just sufficient to perforate said webs; and comprising

means for selectively providing a smooth clear path about the circumference of said roller for threading of the webs thereover, or a path in which said projections or pins engage said webs for positive transport thereby, including

means **(4, 5, 13, 33)** for selectively positioning the engagement pins **(11, 34)** either below, or projecting above a generated cylindrical outline defined by the largest radial dimension of the at least one engagement roller in the region of contact of the webs over said at least one engagement roller.

4,605,210

APPARATUS FOR FOLDING TRAVELING WEBS USING A SERIES OF ROLLER PAIRS

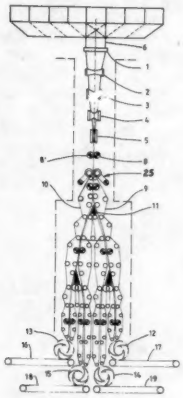
Hatto Hechler, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Aug. 8, 1985, Ser. No. 763,805

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429172

Int. Cl.[4] B41L *1/30*

U.S. Cl. 270—41 **9 Claims**



1. Folding apparatus to fold a traveling web, or a plurality of superposed traveling webs **(6)**, especially printed material or products received from a printing machine, about a theoretical ridge line (M, M') to thereby fold together said web and define two folded edge lines (R, R' . . .),

comprising, in accordance with the invention,

a plurality of folding stages (S1 . . . S5), located at different height levels with respect to the direction of a theoretical ridge line of the material entering a first stage, and to define height offsets of the respective stages with respect to said first stage (S1),

each folding stage including

a folding roller pair **(1, 1' . . . 5, 5')**, the rollers **(1, 2 . . . 5; 1', 2' . . . 5')** of the pair being located at opposite sides of the web or superposed webs **(6)** and the web or superposed webs being guided between the rollers of the pairs, to be folded thereby, in steps;

and wherein

the spacing of adjacent folding stages (e.g. S1–S2), and

the folding angle of the respective adjacent adjacent stages are related to

the height offset of the downstream subsequent stage (S2)—in the direction of travel of the web—

and the angular direction of a line (Z) connecting the centers of the rollers of the pair (2, 2') of the downstream stage, such that the length dimension of the theoretical ridge line between adjacent stages (S1–S2) corresponds at least approximately to the length dimension of the theoretical longitudinal edge lines (R) of the web between the corresponding adjacent stages (S1–S2).

4,605,211

AUTOMATIC SHEET PROCESSING DEVICE HAVING TILTABLE COLLECTING TRAY ADJACENT CORNER BINDER STATION

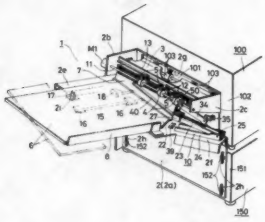
Hiraku Sonobe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 628,297, Jul. 6, 1984, abandoned, and Ser. No. 633,271, Jul. 23, 1984, abandoned. This application Aug. 7, 1985, Ser. No. 763,396

Claims priority, application Japan, Jul. 12, 1983, 58-126612; Jul. 12, 1983, 58-126613; Jul. 12, 1983, 58-126614; Jul. 12, 1983, 58-126615; Jul. 12, 1983, 58-126616; Jul. 25, 1983, 58-135644; Jul. 25, 1983, 58-135645; Jul. 25, 1983, 58-135646; Jul. 25, 1983, 58-135647; Jul. 25, 1983, 58-135648

Int. Cl.[4] B42B *1/02*

U.S. Cl. 270—53 **17 Claims**



1. A sheet collecting tray device comprising:

a sheet collecting tray disposed in a posture inclined forwardly upwardly or forwardly downwardly and rightwardly downwardly or leftwardly downwardly with respect to a sheet discharge port portion for receiving sheets put out from a sheet outputting apparatus, said tray being rockably supported;

tray rocking means for selectively changing said tray to a first posture in which it is capable of receiving the output sheets from the sheet outputting apparatus and a second posture more steeply inclined than said first posture;

sheet aligning means for stopping the two side edges on the sliding-down side of the sheets successively discharged into said tray in said first posture and piled therein and aligning the sheets with one another; and

binding means operating at a predetermined point of time after a predetermined number of sheets have been put out from the sheet outputting apparatus into said tray and binding a bundle of aligned sheets in said tray;

said tray being changed over to said second posture by said tray rocking means so that the bound bundle of sheets in said tray is slidingly discharged out of said tray.

4,605,212

DEVICE ON A FOLDING GRIPPER CYLINDER TO ACCEPT FOLDED PRODUCTS

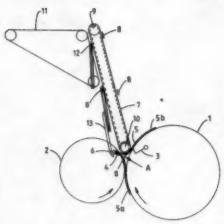
Ingo Kobler, Anhausen, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 19, 1985, Ser. No. 757,005

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427559

Int. Cl.[4] B65H *39/02*

U.S. Cl. 270—54 **15 Claims**



1. Device on a folding gripper cylinder to accept and further transport the folded products provided between a folding gripper cylinder and a folding blade cylinder with a crosswise fold, by means of a revolving transport device, characterized in that the revolving transport device (**7**), provided with drivers (**8**), is arranged in the approximately wedge-shaped region (A) behind the transfer point of the folded product (**5**) from the folding blade cylinder (**1**) to the folding gripper cylinder (**2**), that the drivers (**8**) are positioned on the transport device (**7**) in such a manner that one driver at a time, after the insertion of the folded product (**5**) into the folding gripper (**4**) of the folding gripper cylinder (**2**) is inserted engagingly into the region (A) between the two halves (*5a, 5b*), which are still resting on the folding blade cylinder (**1**), and that after the release of the folded product (**5**) by the folding grippers (**4**), the drivers (**8**) transport the folded products (**5**) further after they have been removed from the folding gripper cylinder (**2**).

4,605,213

APPARATUS FOR CONTINUOUS HANDLING OF FOLDED PAPER PRODUCTS

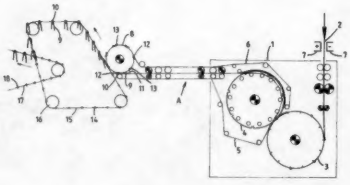
Hatto Hechler, Augsburg, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 18, 1985, Ser. No. 756,779

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427558

Int. Cl.[4] B65H *5/30*

U.S. Cl. 270—55 **9 Claims**



1. Apparatus for further handling of the folded products produced in the folding apparatus of a rotary printing machine, having a device for opening these products,

characterized in that the folded items (**9**) transferred from the folding apparatus (**1**) by means of conveyor belts (**5, 6**) can be grasped by the leading folded spine (**10**) by forward grippers (**12**) disposed on a rotating opening cylinder (**8**),

that rearward grippers (13) disposed on the opening cylinder (8) grasp the overhang (11) of the folded items (9), that after the folded items (9) have been grasped by the forward and rearward grippers (12, 13), the half of the folded items (9) remote from the opening cylinder (8) moves away, because of centrifugal force, from the half held on the opening cylinder (8) by the forward and rearward grippers (12, 13), so that at least one of the rods (14 disposed at intervals on a revolving conveyor belt or chain system (15) and traveling approximately parallel past the opening cylinder (8) can, upon its approximately tangential upward movement, be introduced into the respective folded item (9) then being opened, after which the forward and rearward grippers (12, 13) respectively release the folded item (9) and the folded items (9) that are held by the rods (14) can be transferred onto rods (18) of further conveyor belt or chain systems (17).

4,605,214

LABEL HANDLING APPARATUS

Bernard W. Hanning, 49, St. Jude's Road, Englefield Green, Egham, Surrey, and John N. Dent, 2, Ellerman Avenue, Twickenham, Middlesex, both of United Kingdom

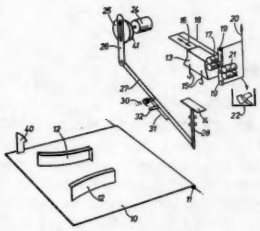
PCT No. PCT/GB83/00219, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/01045, PCT Pub. Date Mar. 15, 1984

PCT Filed Sep. 6, 1983, Ser. No. 610,279

Claims priority, application United Kingdom, Sep. 6, 1982, 8225326

Int. Cl.⁴ B65H *1/08*

U.S. Cl. 271—3.1 **10 Claims**



1. A label handling system comprising: a plurality of label-receiving boxes, apparatus including a box-receiving station, means for ejecting upwardly a stack of labels from a label containing box placed in the box-receiving station into a hopper having a downwardly opening aperture for receiving a stack of labels, and means for removing labels sequentially from the top of the stack in the hopper and passing labels so removed through a data reading station at which price and weight data are read from the labels and subsequently further processed.

4,605,215

PROCESSING STATION FOR AN ELECTROPHOTOGRAPHIC INFORMATION PRINTER

Hans C. Hyltoft, Vaerlose, Denmark, assignor to Mercante International A/S, Glostrup, Denmark

Filed Oct. 19, 1984, Ser. No. 662,553

Claims priority, application Denmark, Nov. 3, 1983, 5047/83; Sep. 14, 1984, 4388/84

Int. Cl.⁴ B65H *3/44*

U.S. Cl. 271—9 **2 Claims**

1. An electrophotographic information printer utilizing a zerographic system comprising

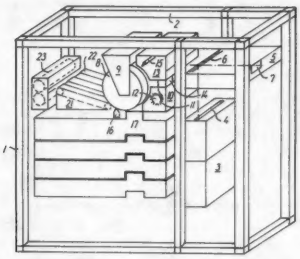
a sheet supply with associated sheet feeding means for feeding individual sheets to a sheet advancing path;

a movable photoconductor with an associated image transfer device arranged at said sheet advancing path for transferring a toner image developed on said photoconductor to a sheet advanced along said sheet advancing path;

a further sheet advancing device for conveying sheets from said image transfer device to a fixation device;

said sheet supply device with associated sheet feeding means, said photoconductor and said further sheet advancing device forming individual replaceable first, second and third sheet processing modules, respectively;

at least two of said first, second and third modules each including a rotatable member and an individual drive



means in the form of an electronic stepping motor which is mechanically coupled to the respective rotatable member within said module;

a program-controlled control unit; and

a device operated by the program-controlled control unit for selectively supplying predetermined numbers of pulses at controlled pulse frequencies to the respective stepping motors within said at least two modules for operating said stepping motors in an operational sequence for said information printer.

4,605,216

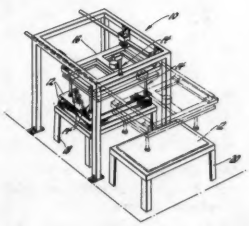
MATERIAL PICK-UP MECHANISM

Albert C. DeWitt, Warren; Donald W. Herriges, Mt. Clemens, and Donald Stanner, Milford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1984, Ser. No. 633,930

Int. Cl.⁴ B65H *3/22*

U.S. Cl. 271—18.3 **3 Claims**



1. An improved material pick-up mechanism of the type which is moved between a pick-up position against a sheet of fibrous material and a remote position for releasing it, said improved mechanism being adapted to pick up materials of varying texture and resiliency by pinching said materials without piercing and substantially without puckering the material, comprising,

at least two support members each having at least two projections having a gripping surface thereon, the spacing between adjacent gripping surfaces on one support member being substantially identical to the other support mem-

ber with all gripping surfaces being disposable substantially in a plane,

means guiding the support members to be reciprocated relative to each other along substantially side by side paths such that each gripping surface of one support member moves together and apart within the plane relative to a respective gripping surface on the other support member as the support members are reciprocated, the substantially identical spacing between adjacent gripping surfaces on each support member serving to maintain a substantially identical spacing between the pairs of respective gripping surfaces, as they move together and apart,

power means to reciprocate the support members so as to move the respective gripper surfaces together as the mechanism is moved to pick-up position against the material and apart when the mechanism is moved to the remote position,

and adjusting means cooperable between the power means and the guiding means to control the reciprocation of the support members in accordance with the varying material texture and resiliency so that the respective gripping surfaces move a sufficient distance together, as they move against the material, without moving past one another, to a gripping position where said gripping surfaces are separated by a distance sufficiently small to pinch just sufficient fibers of the top surface of the material so that the material may be picked up without piercing the material and substantially without puckering the material, said gripping surfaces moving apart sufficiently to release the material when the mechanism is moved to the remote position,

whereby materials of varying texture and resiliency may be picked up and released without damage.

4,605,217

BILL FEEDING APPARATUS

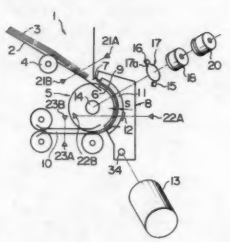
Kowichi Goi, Kawasaki, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1985, Ser. No. 720,286

Claims priority, application Japan, Apr. 6, 1984, 59-68552

Int. Cl.[4] B65H *3/52*

U.S. Cl. 271—124 **5 Claims**



1. A bill feeding apparatus which separates and feeds bills, one at a time, from a stack of bills positioned in a bill handling machine, and which comprises:

(a) a feed-out roller for feeding out the bills by engaging with one surface of the bills,

(b) a friction member having a gap for the passage of bills between the friction member and the feed-out roller and separating the bills, one at a time, by applying friction force to the other surface of the bills from the friction member,

(c) a pressure sensor for detecting pressure acting on the friction member to generate a pressure signal,

(d) a gap adjusting mechanism for adjusting the gap between the friction member and the feed-out roller by moving the friction member, and

(e) a control circuit means for controlling the gap adjusting mechanism to adjust the gap on the basis of the pressure signal from the pressure sensor so that the size of the gap is first set to be zero by sensing when the pressure sensor first provides a pressure signal output as the gap is narrowed and the gap then is increased up to a predetermined value by moving the friction member relative to the feed-out roller in an initialization mode prior to feeding of the bills.

4,605,218

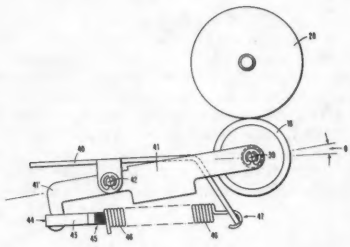
CONSTANT FORCE ROLL ASSEMBLY

James A. Knepper, Longmont, and Leroy Rose, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,728

Int. Cl.[4] B65H *9/16*

U.S. Cl. 271—238 **2 Claims**



1. A convenience copier machine wherein said machine includes:

a document platen;

a cover for said document platen;

an entry tray means across which a document to be copied is fed to said document platen;

aligner roll means to position said document to be copied, said aligner roll means comprised of a first aligner roll mounted near said entry tray and a second aligner roll mounted in said document cover, the two rolls capable of mating with one another to establish an aligner roll nip for feeding said document to said document platen;

mounting means for mounting one of the aligner rolls such that it assumes a stationary position, said nip established within an angular displacement tolerance of six degrees;

mounting means for the other roll for establishing a nominal normal force at said nip at a selected force level in the range of 20 to 30 grams, said mounting means maintaining said selected force level over said angular displacement tolerance to within ten percent of said selected level;

a first reference edge along one side of said document platen and wherein said aligner roll means is positioned near said first reference edge to move one side of said document to be copied into sliding engagement therewith;

a second reference edge parallel to said first reference edge and positioned along an opposite side of said document platen;

a second aligner roll means positioned near said second reference edge to move one side of a document to be copied into sliding engagement with said second reference edge;

said second aligner roll means including a third roll mounted near said entry tray and being positioned at a stationary location within an angular displacement tolerance range of six degrees;

a fourth roll bearing against said third roll when it is at said stationary location for providing a nip therebetween;

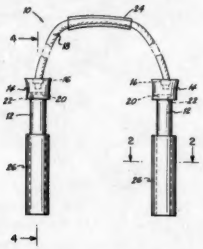
mounting means for said fourth roll for establishing a nominal normal force at said nip at a selected force level in the range of 20 to 30 grams, said mounting means maintaining

said selected force level over said angular displacement tolerance to within ten percent of said selected level; and said selected force level for said second aligner roll means being established within said range at least twenty percent below the force level established for said first aligner roll means.

4,605,219
JUMPERCISER

Elliott Mahana, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed May 14, 1984, Ser. No. 609,823
Int. Cl.[4] A63B *5/20*
U.S. Cl. 272—75 **2 Claims**



1. A jumerciser rope to be used by a person exercising which comprises:

(a) a pair of hollow pipe handles to be gripped by the hands of said person exercising, each said handle having external threads at the top end;

(b) a pair of caps, each said cap having internal threads at the bottom end to engage said external threads of one said handle;

(c) a pair of ball bearings, each said ball bearing mounted within the top end of said cap; and

(d) an elongated rope having each end engaging one said ball bearing to reduce friction when said rope is turned with arms extending parallel to the ground when said person is exercising, further comprising:

(a) each said cap having an inner flared top end so that each said end of said rope can slide within one said flared top end of one said cap;

(b) each said ball bearing having a race mounted on each said flared top end;

(c) a pair of compression springs, each said compression spring mounted on each said one end of said rope within said cap; and

(d) a pair of stop members each said stop member affixed to said one end of said rope to hold one said compression spring against said cap so that when said rope is turned said compression spring wil compress due to centrifugal force acting on the rotating rope resisted by said stop members acting against the spring which reacts against said spring.

4,605,220
ANKLE EXERCISER

Tim L. Troxel, Kearney, Nebr., assignor to Wikco Industries, Inc., Broken Bow, Nebr.

Filed Apr. 12, 1985, Ser. No. 722,648
Int. Cl.[4] A63B *23/04*
U.S. Cl. 272—96 **11 Claims**

1. An ankle exerciser, comprising:

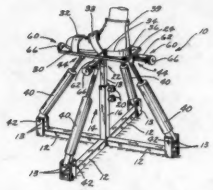
a base;

a support post having one end attached to said base and having the other end attached to a universal swivel joint;

a foot plate attached to said universal swivel joint, said foot plate being pivotable about only a longitudinal axis and a transverse axis;

means connected to said foot plate for independently resisting pivotal movement of said foot plate only said longitudinal axis;

means connected to said foot plate for independently resist-



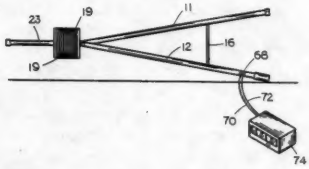
ing pivotal movement of said foot plate only said transverse axis; and

means connected to said foot plate for releasably securing a human foot to said foot plate.

4,605,221
EXERCISE METHOD AND APPARATUS

Nino D'Agosta, 3502 S. 66th St., Omaha, Nebr. 68106

Continuation-in-part of Ser. No. 360,442, Mar. 22, 1982. This application Sep. 10, 1984, Ser. No. 648,767
Int. Cl.[4] A63B *21/06, 5/00*
U.S. Cl. 272—117 **11 Claims**



9. An exercise device for strengthening one's grip, wrist, arms and back, comprising,

a frame means including first, second and third elongate members, each having upper and lower ends, said three elongate members being connected together adjacent the upper ends thereof, said lower ends extending downwardly from said connected upper ends, and terminating in three support points arranged to provide a stable standing frame means upon engagement of said three support points on a flat surface,

a weight attachment means comprising an elongated extension projecting upwardly from said connected upper ends of said elongate members in the stable standing position of said frame means,

a plurality of light incremental disc weights having center openings therein, said disc weights being supported in stacked relation on said extension with said extension extended through said center openings,

means for limiting downward axial movement of said disc weights on said extension,

said disc weights being removably positioned on said extension to thereby accommodate incremental weight variations for a generally 90° pivotal movement of the device about an axis extended between the support points of two elongate members by various users using only a single handed grip on one of said two elongate members adjacent the support point thereof, and

an inclination sensitive electrical switch mounted on said device,

said device being pivotal between said standing stable position and a lying stable position wherein the support points of two elongate members and an upper portion of the device all engage said flat surface, said switch being oper-

ative to close upon downward pivotal movement of said device to a position adjacent to but spaced above said lying stable position.

4,605,222

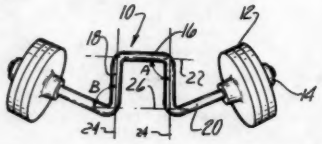
WEIGHTLIFTING EXERCISE BAR

Gary L. Shannon, 637 Brooks, Pontiac, Mich. 48055

Filed Oct. 15, 1984, Ser. No. 661,107

Int. Cl.[4] A63B *11/02, 13/00*

U.S. Cl. 272—122 **17 Claims**



1. A weightlifting bar adapted to receive weight plates and collars, comprising:

a straight center section,

a pair of handle sections extending from said center section, said handle sections being generally parallel to each other and each forming an angle of approximately 90 degrees with respect to said center section, and

a pair of straight weight receiving end portions extending from said handle sections and forming an angle therefrom of less than 90 degrees such that said end portions have nonparallel longitudinal axes.

4,605,223

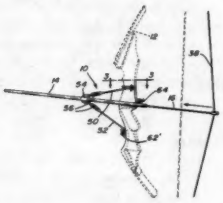
ARCHERY EXERCISING DEVICE

Gérard Rainville, 8387 Bretagne St., Saint-Léonard, Canada (H1R 2W9)

Filed Jan. 31, 1985, Ser. No. 697,024

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—130 **5 Claims**



1. A practice device adapted for use with a bow, the latter being constituted of an arcuate, elastic bow frame, having a front and a rear face, and a cord extending opposite said rear face; said device comprising a liquid-filled cylinder, having a front-closed end, cylinder-securing means carried by said cylinder adapted to secure said cylinder to said bow frame with the rear portion of said cylinder intersecting and transversing the center portion of said bow frame, said cylinder-securing means include a pair of rigid braces fixed to said cylinder adjacent its front end, rearwardly diverging from said cylinder and adapted to be fixed to said bow frame, each brace including a length-adjusting means to vary its effective length, said cylinder-securing means further including a lateral stop member fixed to said cylinder adjacent its rear end and adapted to engage the rear face of said bow frame and with the front end of said cylinder spaced forwardly of the front face of said bow frame, a reciprocal piston within said cylinder, a piston rod fixed to said piston and protruding from the rear end of said cylinder, means at the outer end of said piston rod adapted to receive said cord, so that the latter may propel said piston inside said cylinder and a restricted passage at said piston allowing transfer of said liquid between the ends of said piston.

4,605,224

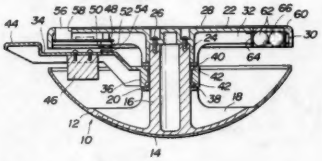
EXERCISE APPARATUS

Masakatsu Torii, Hatogaya, Japan, assignor to Saitama Kako Co., Ltd., Hatogaya, Japan

Filed May 14, 1984, Ser. No. 609,698

Int. Cl.[4] A63B *23/04*

U.S. Cl. 272—146 **5 Claims**



1. Exercise equipment for improving the bodily balance function through active bodily movements comprising: a spherical sector-shaped member having an inner surface and an outer surface, said outer surface being adapted to contact the floor surface, a column extending radially from the center of the inner surface of said spherical sector shaped member towards the center of the sphere, a rotatable arm having a base end and a free end, a boss formed at said base end which is rotatably mounted on said column, said rotatable arm extending radially outwardly from said column and projecting beyond the outer periphery of said spherical sector-shaped member, a base plate having a periphery corresponding generally to the periphery of said spherical sector-shaped member and having upper and lower surfaces, said base plate being provided with connecting means at the center of its lower surface adapted to be fitted and secured to said column, and an electric circuit means for detecting and indicating rotation of said arm relative to said base plate.

4,605,225

POURING SPOUT HAVING AN INSERT

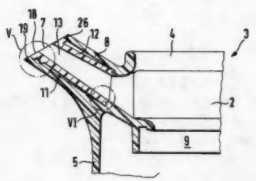
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,152

Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317106

Int. Cl.[4] B65D *25/42*

U.S. Cl. 222—566 **12 Claims**



1. A pouring section for use with a container for liquids, said container having an open neck portion of injection-molded material on its upper end, said pouring section cooperating with said container and forming a tube-like spout through which liquid contents of said container can be poured, said tube-like spout comprising:

a moldable member laterally projecting out of said neck portion of said container and having an open conduit communicating with said neck portion of said container, said molded member having

a first portion communicating with said neck portion of said container and having a cylindrically shaped bore diverging toward the interior of said container, and

a second portion communicating with said first portion and having a bore of substantially uniform cross sectional area and facing outward from said container; and

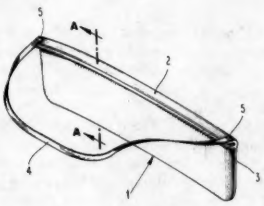
a molded insert having an outside diameter and shape corresponding to said bore in said second portion of said molded member for insertion thereinto and having a channel therein for passage of liquid, said channel being conically shaped and diverging toward an outer wall of said container, such that wide end of said conically shaped channel fits flush up against said cylindrically shaped bore in said first portion of said molded member.

4,605,226

HEAD GUIDE AND BATTING HELMET

James Morrissey, 58 Mary St., Ashley, Pa. 18706

Filed Aug. 23, 1984, Ser. No. 643,784
Int. Cl.[4] A63B *61/00*
U.S. Cl. 273—26 C **4 Claims**



1. A baseball training device in combination with a protective baseball batting helmet having a beak comprising

a. a shield comprised of a elongated top flange and a main opaque body, said shield having adjustment means and a length whereby said shield may be adjusted on said helmet beak to cover only the left half of the face of a left handed batter and only the right half of the face of a right handed batter,

b. said adjustment means being a groove defined along the length of said flange, of a width accommodatingly larger than the thickness of the beak, and slidingly mounted thereon;

c. means for releasably attaching said shield to said protective batting helmet.

4,605,227

ATHLETE'S ARM RESTRAINER

Bruce Hurd, Ridgefield, Conn., and Robert Oda, Englewood Cliffs, N.J., assignors to Accuswing, Incorporated, Easton, Conn.

Continuation-in-part of Ser. No. 606,205, May 2, 1984, abandoned. This application Jan. 30, 1985, Ser. No. 697,412
Int. Cl.[4] A63B *71/02*
U.S. Cl. 273—54 B **8 Claims**

1. An arm restrainer comprising:

an upper mounting member to be worn on a person's upper arm above the elbow;

a lower mounting member to be worn on the person's forearm below the elbow;

and a hinge acting between said upper and lower mounting members and permitting the person's arm to bend at the elbow, and means in said hinge operable upon movement of the person's forearm to straighten the arm for locking said hinge to prevent the arm from bending at the elbow;

said hinge comprising:

a rigid upper hinge structure attached to said upper mounting member;

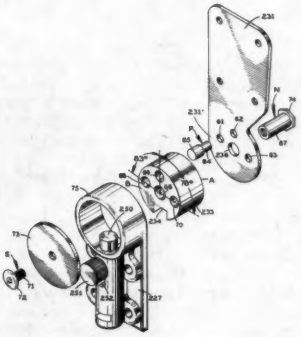
a rigid lower hinge structure attached to said lower mounting member and pivotally coupled to said upper hinge structure;

and a detent mechanism acting between said upper and lower hinge structures for automatically locking them together against further pivotal movement of one with respect to the other when they are brought into a predetermined angular relationship between one another;

one of said hinge structures having a portion with a peripheral surface which extends circularly about the pivotal axis between said upper and lower hinge structures, said one hinge structure having a detent recess at one location along said peripheral surface;

and the other of said hinge structures having a locking element slidably engageable with said peripheral surface and spring means biasing said locking element against said peripheral surface to snap into said detent recess when said locking element registers with the detent recess;

said one hinge structure comprising:



a hinge member rigidly attached to the corresponding mounting member;

a bushing member formed separate from said hinge member and having a circular periphery with said detent recess therein;

means supporting said bushing member on said hinge member for rotative adjustment about the axis of said circular periphery;

and means for selectively locking said bushing member in different rotative positions on said hinge member to thereby adjust the position of said detent recess angularly about said axis;

said hinge member having a plurality of openings evenly spaced radially from said axis at 90 degrees apart;

said bushing member having a plurality of angularly spaced openings at the same radial distance from said axis as said openings in the hinge member and each selectively registrable with a corresponding opening in the hinge member, depending upon the rotative position of said bushing member about said axis;

and said means for locking comprising a locking member snugly but slidably insertable in respective openings in said bushing member and said hinge member which register with each other.

4,605,228

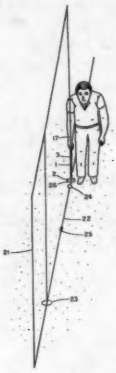
METHOD OF PUTTING A GOLF BALL

Fred W. Guendling, Jr., 199-4 Center St., Box 443, Mokena, Ill. 60448

Division of Ser. No. 490,285, May 2, 1983, Pat. No. 4,523,758. This application Apr. 29, 1985, Ser. No. 728,016

Int. Cl.[4] A63B *53/00*

U.S. Cl. 273—77 R **2 Claims**



1. A method of putting a golf ball, comprising the steps of selecting a putting club having a shaft which can be held vertically in the same vertical plane as the vertical midline of a golf ball in position for putting toward the cup and a selected aiming point which is between the ball and the cup in a selected path of travel which is intended to enable the ball to roll into the cup, holding such club shaft at one side in such vertical position with only the hand on that side gripping said club shaft, facing forward in the direction of the said selected path of travel with the hand on the opposite side free, swinging said club with said one hand in a way whereby said shaft thereof remains substantially in said vertical plane throughout said swing, and striking said golf ball with that portion of the striking surface of its club head which is in line with the axis of said club shaft impacting against the golf ball at its said vertical midline which lies in said vertical plane to cause said ball to roll along said selected path of travel substantially in said vertical plane until it passes over said selected aiming point.

4,605,229

TOY DRAGSTRIP AND STARTING TOWER

Robert S. McKay, 7420 Beckwith Rd., Morton Grove, Ill. 60053

Filed Feb. 8, 1985, Ser. No. 699,592

Int. Cl.[4] A63F *9/14*

U.S. Cl. 273—86 R **12 Claims**

1. A toy dragstrip for toy vehicles comprising;

a base defining at least two starting gates to receive toy vehicles therein,

means to release said vehicles upon indication of a starting signal,

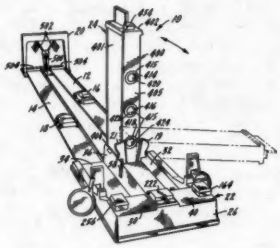
a starting tower defined by an elongated housing having top and bottom ends, said bottom end being releasably pivoted to said base, for movement between a generally vertical position and an inclined position with the top end thereof disposed below the bottom end thereof,

said housing including a wall defining a plurality of apertures, which, when said housing is in said vertical position, are spaced vertically one below the other,

at least three marbles contained within said housing, each associated with one of said apertures,

said housing including landings adjacent each of said apertures to receive one of said marbles at said aperture to expose at least a portion of said marble to the exterior of said housing through said aperture,

said housing further including webs which, when said housing is in said vertical position, define inclined paths including a path for a first marble commencing adjacent the top end of said housing and terminating adjacent the vertically uppermost of said apertures, a path for a second marble commencing adjacent the landing for said first marble and terminating adjacent the next lowermost aperture, and a path for a third marble commencing adjacent the landing for said second marble and terminating adjacent the next lowermost aperture,



marble holding means formed at the commencement of each said path for releasably holding said associated marble at the commencement of said path,

marble release means accessible exteriorly of said housing and actuable to move said first marble from its marble holding means to cause it to travel along its inclined path to its landing, said movement causing said second marble to move from its marble holding means and to travel along its inclined path to its landing, said movement causing said third marble to move from its marble holding means and to travel along its inclined path to its landing.

4,605,230

TOY VEHICLE GAME WITH LAUNCHER AND RETURN MEANS

Wayne R. Halford, and Walter S. Nakano, both of Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 566,591, Dec. 29, 1983, Pat. No. 4,513,967. This application Jan. 24, 1985, Ser. No. 694,531

Int. Cl.[4] A63B *67/14*

U.S. Cl. 273—129 AP **2 Claims**

1. A launcher for a toy car adapted to be connected to a track section, comprising:

a supporting base;

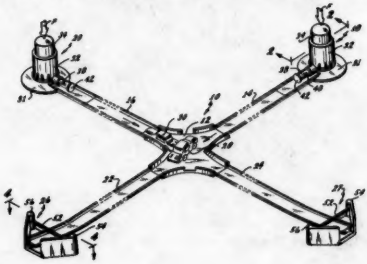
an exterior hollow cylinder extending in a generally vertical direction upwardly from said supporting base and having a small exterior hollow cylinder extending in a generally horizontal direction outwardly from said exterior hollow cylinder near the bottom of said exterior hollow cylinder, said exterior hollow cylinder and small exterior hollow cylinder having generally perpendicular longitudinal axes;

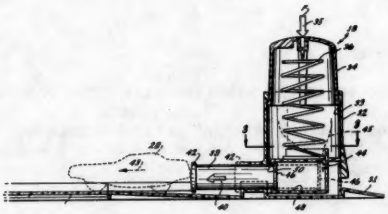
a generally horizontal internal hollow cylinder operably supported by said base, said internal hollow cylinder being disposed within a first hollow interior of said exterior hollow cylinder and immediately below a second hollow interior of said exterior hollow cylinder, said first hollow interior being separated from said second hollow interior by a plate member, said internal hollow cylinder being directly connected to said second hollow interior of said exterior hollow cylinder by a constricted opening in said plate member;

a small piston slidable engaging said internal hollow cylinder and said small exterior hollow cylinder, said small piston being capable of exiting said launcher in a generally horizontal direction through an opening at one end of said

small exterior hollow cylinder, one end of said small piston being enlarged in order to prevent movement of said small piston upon contact with an end of said internal hollow cylinder;

a large piston slidably engaging said external hollow cylinder inside said second hollow interior, said large and small pistons having a compression ratio so that actuation of said large piston causes compressed fluid in said second hollow interior of said external hollow cylinder to flow





through said constricted opening directly into said internal hollow cylinder and to act against said one end of said small piston resulting in said small piston exiting said launcher through said opening of said small exterior hollow cylinder in a generally horizontal direction for the purpose of launching a toy car resting against the other end of said small piston; and

a compressed spring located within said launcher resisting downward movement of said large piston, one end of said spring being supported by said plate member.

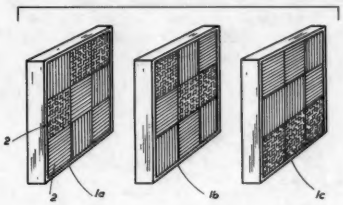
4,605,231

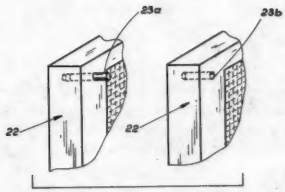
LIGHT TRANSMISSION PUZZLE GAME

Lawrence D. Richman, 7167 Lake Worth Rd., Lake Worth, Fla. 33463

Filed Sep. 19, 1984, Ser. No. 652,089
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—157 A **12 Claims**

1. A puzzle game having at least one solution comprising at least 2 multicolored superposable light permeable portions, said portions selected from the group consisting of colored and uncolored transparent elements and colored and uncolored translucent elements disposed in such a way that at least one superposition of light permeable portions, each in individually light continuous disposition will define one solution in which the surface appearance of the puzzle is of the same color and wherein each said light permeable portion further comprises an





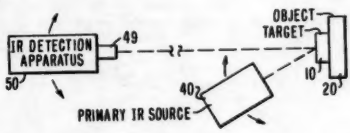
engaging means suitable for registrably engaging at least one other superposable light permeable portion.

4,605,232

INFRARED RADIATION RESPONSIVE TARGET

Richard L. Hundstad, 221 Woodside Rd., Pittsburgh, Pa. 15221

Filed Apr. 24, 1984, Ser. No. 603,350
Int. Cl.[4] F41J *1/00*
U.S. Cl. 273—348.1 **12 Claims**



1. An infrared radiation responsive target system, comprising,

a non-thermal target structure for scattering impinging infrared radiation to produce retro-reflected infrared radiation in a diffuse distribution simulating the radiation distribution of a thermal target,

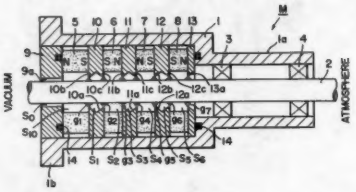
a source of infrared radiation energy for directing infrared radiation energy onto said non-thermal target structure, and

infrared radiation detection means responsive to the retro-reflected infrared radiation from said non-thermal target structure.

4,605,233
MAGNETIC FLUID SEALING DEVICE

Kimio Sato, Tokyo, Japan, assignor to Rigaku Keisoku Kabushiki Kaisha, Musashi-Murayama, Japan

Filed Sep. 13, 1983, Ser. No. 531,704
Claims priority, application Japan, Sep. 16, 1982, 57-159662
Int. Cl.[4] F16J 15/40
U.S. Cl. 277—80 7 Claims



1. A magnetic fluid sealing device comprising

a housing disposed between a low pressure environment and a high pressure environment:

a shaft of magnetic material rotatably mounted in said housing;

a plurality of annular permanent magnets mounted in said housing coaxially of each other with the polarity of the opposite surfaces of two adjoining magnets being the same;

a plurality of annular pole pieces mounted in said housing in alternating manner with said magnets, each pole piece having at least one annular knife edge on an inner periphery facing said shaft, each said knife edge being disposed to pass magnetic flux from an adjacent magnet to capture a ring of magnetic fluid between said shaft and said respective knife edge and form a barrier to maintain a pressure difference between the low pressure environment and the high pressure environment; and

wherein said magnet closest to the low pressure environment generates a greater magnetic flux density in said one knife edge of an adjacent pole piece than the other of said magnets in respective said pole pieces, thus providing a stronger sealing effect adjacent said low pressure environment.

4,605,234
MECHANICAL SEAL ASSEMBLY WITH ORIENTATION MAINTAINING MEANS

Maurice E. Metcalf, 1028 Avenue E, Nederland, Tex. 77627

Filed Dec. 16, 1985, Ser. No. 808,943
Int. Cl.[4] F16J 15/34
U.S. Cl. 277—81 R 13 Claims

1. A mechanical seal assembly for use with a rotatable shaft passing through a housing, said seal assembly comprising:

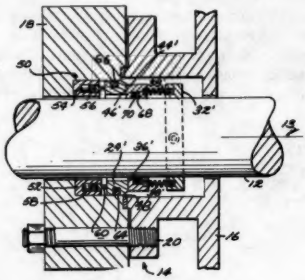
a first ring member attached to and rotatable with said shaft:

a first annular seal member positioned in fluid-tight contact around and rotatable with said shaft:

at least one spring member yieldingly connected between said ring member and said seal member;

a second annular seal member positioned within said housing in spaced relationship from and around said shaft and in fluid-tight relationship with said housing and with said first seal member; and

flowable material filled means in operative relationship with said housing and with said second seal member for cooperating with said first seal member to enable said second

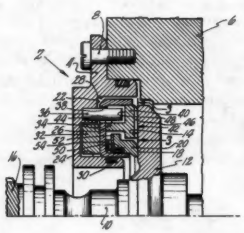


seal member to be maintained in a predetermined orientation with respect to said shaft.

4,605,235
HIGH THRUST CAPACITY SHAFT SEAL ASSEMBLY FOR FUEL PUMPS

Jack G. Sundberg, Meriden, and Paul L. Haynes, Jr., Pleasant Valley, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Sep. 12, 1984, Ser. No. 649,676
Int. Cl.[4] F16J 15/34
U.S. Cl. 277—87 7 Claims



1. In an improved shaft seal assembly for a pump having a pump housing and a drive shaft with a sealing face extending therein of the type comprising: a seal housing mounted upon the front of the pump housing in surrounding relationship to the drive shaft, a face seal, having its seal face in wiping engagement with the sealing face, mounted in the seal housing such that it is and capable of universal motion and wherein the improvement comprises:

a thrust member having a thrust face mounted in the seal housing for universal motion with respect thereto and such that its thrust face engages the sealing face during normal pump operation;

means to prevent rotation of the thrust member with respect to the seal housing; and

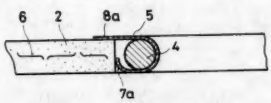
means to transmit movements of the thrust member to the face seal such that misalignments between the seal housing and the axis of the drive shaft produce corresponding displacements in the axis of the face seal.

4,605,236

CYLINDER HEAD GASKET CONSTRUCTION

Keiichi Tsuchihashi; Shinji Yamada; Makoto Arakawa; Osamu Aizawa, and Nobuyuki Otomo, all of Tokyo, Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha and Marusan Packing Manufacturing Co., both of Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,924
Claims priority, application Japan, Aug. 29, 1983, 58-157447
Int. Cl.[4] F16J 15/12
U.S. Cl. 277—235 B 6 Claims



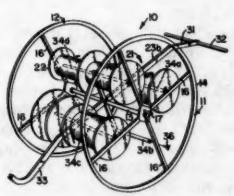
1. In a cylinder head gasket for engines comprising a gasket main body formed with bores and bore walls to match with the cylinder bore and a metal grommet provided in said bore of the gasket about the periphery of the gasket bore, said metal grommet having an arcuate cross-section with spaced apart ends and retaining a metal compression ring in an enveloping fashion, with at least one said end of said metal grommet being bent so as to exert a spring abutting force on the bore wall of the gasket to assist in holding and centering the grommet relative to said bore wall.

4,605,237

WIRE REEL CARRIAGE

Donald L. Torgrimson, Minot, N. Dak., assignor to Main Electric Construction, Inc., Minot, N. Dak.

Filed Feb. 9, 1984, Ser. No. 578,675
Int. Cl.[4] B65H 75/40
U.S. Cl. 280—47.24 13 Claims



1. A carriage for transporting reels of electric wire, said carriage comprising:

a pair of large light weight wheels, said wheels being axially aligned and spaced from each other;

axle means extending between said pair of wheels;

means for supporting a plurality of reels of electric wire, said support means being mounted on said axle means intermediate said wheels, said support means comprising a plurality of elongated arms extending radially from said axle means at spaced locations around said axle means, said support means further including reel support shafts carried by said arms, said reel support shafts being disposed near the radially outer ends of said arms, said shafts each being adapted to rotatably support at least one wire carrying reel;

said wheels each including a plurality of spokes, said spokes being spaced sufficiently to permit insertion and removal of wire reels therebetween for mounting and dismounting on said reel support shafts; and

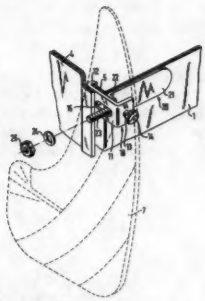
drawbar means for drawing said carriage from one location on a construction site to another.

4,605,238

DEVICE FOR FIXING A MUD FLAP TO THE FENDER FOLD OF A MOTOR VEHICLE

Knut Arenhold, Westend 7, 2000 Hamburg 52, Fed. Rep. of Germany

Filed Apr. 20, 1984, Ser. No. 602,503
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315341
Int. Cl.[4] B62B 9/14
U.S. Cl. 280—154.5 R 15 Claims



1. A device for fixing a mud flap to a motor vehicle body having a fender fold with a free end, which device comprises:

a bracket member with a central part, whose length exceeds the width of the fender fold, a hooked-shape section on one end of said central part for engaging around the free end of said fender fold, and a support section at the other end of said central part for supporting at least one threaded screw member in a respective threaded taphole; said central part of said bracket member having at least one elongated slot whose longitudinal extension runs substantially in the direction of an an imaginary line connecting said hook-shaped section and said support section; and

a pressure member which can be pressed by said at least one threaded screw member against the vehicle body area proximate said bracket member, said pressure member comprising an elongated base plate having a side contactable with said vehicle body area proximate said bracket member, a bent portion on one end of said base plate, at least one threaded bolt mounted on said bent portion, said at least one threaded bolt receivable within a respective slot formed in said central part of said bracket member whereby said mud flap is supported adjacent said bracket member by said at least one threaded bolt.

4,605,239

WHEELCHAIR TIRE AND WHEEL CLEANER

Jeff Warfel, 23 Lantern Cir., Spearfish, S. Dak. 57783

Filed Jun. 20, 1984, Ser. No. 622,748
Int. Cl.[4] B60S 1/68
U.S. Cl. 280—158 R 6 Claims

1. Apparatus for cleaning rotating wheels, comprising:

a U-shaped mounting bracket having a receptacle and also having tightening means for tightening the open ends of the "U" securely onto a support to which the mounting bracket is to be clamped;

a support arm having a supporting extremity that fits within said receptacle;

a brush tightly attached to said support arm; and

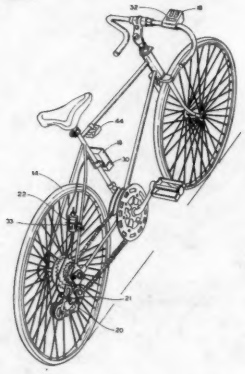
indexing means to retain said support arm in one of a plurality of user-selectable rotational positions, wherein said indexing means comprises a plurality of flattened surfaces within said receptacle and on said supporting extremity of said supporting arm.

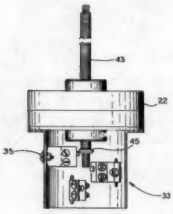
4,605,240

ELECTRONICALLY CONTROLLED BICYCLE TRANSMISSION

William E. Clem, and William C. Trethewey, both of Lancaster, Ohio, assignors to Telewe', Inc., Lancaster, Ohio

Filed Aug. 18, 1983, Ser. No. 524,445
Int. Cl.[4] F16H *7/22, 9/00*
U.S. Cl. 280—236 **1 Claim**





1. An improved automatic shifter for shifting the transmission of a human powered vehicle which includes pedals drivingly connected through a variable speed transmission to a wheel, said transmission including a movable shift member for changing the transmission ratio, wherein the improvement comprises:

(a) a velocity detector means mounted to said vehicle for generating an electrical signal representing the velocity of a wheel of said vehicle;

(b) a plurality of manual control switches;

(c) a microcomputer having inputs connected to the output of said velocity detector means and to said control switches;

(d) a digitally controlled motor/actuator means having its control input connected to an output port of said microcomputer and its output shaft linked to the shift member of said vehicle, said motor actuator means comprising a linear stepping actuator having a position detector means for providing electrical signals representing the current transmission ratio position, the output of said detector means being connected to an input port of said microcomputer, the position detector means comprising a cam mounted to the screw shaft of said linear actuator and a plurality of microswitches mounted about and axially spaced along said screw shaft and having their cam follower portions extending inwardly for engagement with said cam; and

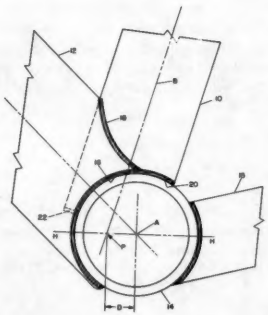
(e) a source of electrical energy connected for operating the above elements of said improvement.

4,605,241

RACING BICYCLE FRAMESET

David R. Graham, West Redding, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Dec. 27, 1984, Ser. No. 686,652
Int. Cl.[4] B62D *19/06*
U.S. Cl. 280—281 R **3 Claims**



2. In a racing bicycle frameset that includes a single straight seat tube, a down tube and a tubular bottom bracket, all of aluminum alloy joined directly to each other by weldments at junctures with each other, the down tube having an outside diameter substantially greater than the outside diameter of the seat tube, the improvement wherein the centerline of the seat tube intersects the horizontal plane of the frameset that includes the centerline of the bottom bracket tube a substantial distance forwardly of the bottom bracket tube centerline.

4,605,242

SUPPORT FOR A BICYCLE AND RIDER

James F. Kimball, 83617 Rattlesnake Rd., Dexter, Oreg. 97431

Division of Ser. No. 571,942, Jan. 19, 1984, Pat. No. 4,563,017.
This application Oct. 18, 1985, Ser. No. 788,960
Int. Cl.[4] B62H *1/08*
U.S. Cl. 280—294 **6 Claims**

1. A pedal and stand combination for a two-wheeled vehicle to support same and a rider during momentary stops, said combination comprising,

a pedal assembly including treads and adapted at one end for attachment to the vehicle,

a stand assembly including,

a base in place on the remaining end of said pedal,

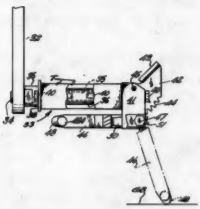
means extending through said treads and securing said base to said pedal assembly,

an arm pivotally mounted at one end to said base and having a ground engageable end,

foot actuated trigger means rotatably mounted on said base for downward rotation about a horizontal axis, said foot actuated trigger means normally projecting up-

wardly from the base when the stand assembly is inoperative,

motion translation means interposed between said trigger means and said arm and urging said arm downwardly to



an extended position during movement of said trigger means, and

means acting on said arm to bias same toward a raised stowed position, said arm urging said foot actuated trigger means toward a raised position.

4,605,243

FOLDING PUSHCHAIR

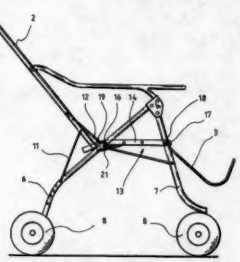
Dieter Gläser, Dachau, Fed. Rep. of Germany, assignor to PEG Perego Pines Deutschland GmbH, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,665

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337493

Int. Cl.[4] B62B *7/06*

U.S. Cl. 280—642 **38 Claims**



1. A folding pushchair comprising: a chassis, which is provided on each side with first and second chassis struts carrying wheels at their bottom ends and pivotally connected so that they can swing apart out of a folded position, in which they lie side by side, into a position of use, and are securable in the position of use by means of a fastening device; and, joined to the chassis, a push handle, a back part and a seat part; the push handle being joined on each side of the pushchair to the first chassis strut by means of a first intermediate link and to the second chassis strut by means of a second intermediate link; the pivot point in which the second intermediate link is joined to the push handle lying at a distance above the pivot point at which the first intermediate link is joined at the push handle; the fastening device being pivotable upwards, about a bearing on the first chassis strut; out of a fastening position, in which the fastening device extends rigidly between the first and second chassis struts, into a released position to allow relative movement of the two chassis struts; and the seat part being supported on the fastening device in such a manner that it rests on the device when the latter is in its fastening position.

4,605,244

VEHICLE SUSPENSION APPARATUS

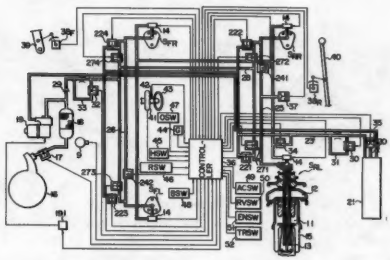
Tadao Tanaka, Okazaki; Sunao Chikamori, Nagoya; Mitsuhiko Harara, Okazaki; Yasutaka Taniguchi; Masanaga Suzumura, both of Nagoya; Minoru Tatemoto, Okazaki; Naotake Kumagai, Aichi; Hiroki Abe, and Shozo Takizawa, both of Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1985, Ser. No. 727,370

Claims priority, application Japan, Apr. 28, 1984, 59-63111

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—707 **6 Claims**



1. A vehicle suspension apparatus comprising suspension units each provided for each wheel and having a fluid spring chamber, fluid supply means for supplying fluid to said fluid spring chambers of said suspension units through a fluid supply control on-off valve, fluid exhausting means for exhausting fluid from said fluid spring chambers of said suspension units through an exhaust control on-off valve, and communicating means for communicating the fluid spring chambers of the front left and right suspension units with one another and communicating the fluid spring chambers of the rear left and right suspension units with one another through respective communication control valves, said communication control valves of said communicating means being normally held open to communicate the fluid spring chambers of the front left and right suspension units with one another and communicate the fluid spring chambers of the rear left and right suspension units with one another, a rolling displacement of the vehicle body being suppressed with said communication control valves of said communicating means closed and with fluid supplied to contraction side fluid spring chambers and exhausted from elongation side fluid spring chambers with respect to the direction of rolling of the vehicle body,

said vehicle suspension apparatus further comprising:

steering state detecting means for detecting the steering state of the vehicle;

vehicle velocity sensing means for sensing the vehicle velocity;

rolling suppression starting means functioning, when it is decided from the steering angular velocity detected by said steering state detecting means and the vehicle velocity detected by said vehicle velocity sensing means that it is necessary to start a rolling control, to close said communication control valves of said communicating means and also effect on-off control of said communication control valves, fluid supply control on-off valve and exhaust control on-off valves such as to supply fluid to the contraction side fluid spring chambers and exhaust fluid from the elongation side fluid spring chambers with respect to the direction of rolling of the vehicle body; and

rolling control restoring means for opening said communication control valves when it is decided by said steering state detecting means that the steering is being-executed in a returning direction toward a center position after the start of the rolling control caused by said rolling suppression starting means and also it is decided from the steering

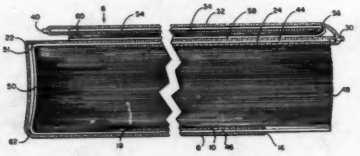
angular velocity detected by said steering state detecting means and the vehicle velocity detected by said vehicle velocity sensing means that said vehicle body begins returning to a neutral state.

4,605,245

SELF-ADJUSTING BOOK COVER

Leonard B. Weaver, 4325 S. Bruce St., Apartment #78, Las Vegas, Nev. 89109

Filed May 22, 1984, Ser. No. 613,075
Int. Cl.[4] B42D *3/00, 3/02, 3/04, 3/18*
U.S. Cl. 281—34 **4 Claims**



1. In combination, a telephone book cover adapted to extend around the exterior of a telephone book comprising a first section having an open-ended sleeve formed from inside and outside panels and adapted to slidingly receive the back cover of a telephone book, a second section having a pocket adapted to slidingly receive the front cover of a telephone book, and a third section extending rearwardly from the second section having at least one pocket formed by flat rectangular panels having three sealed edges, and

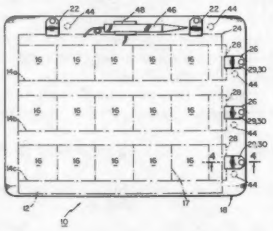
a plurality of pages bound into a book having front and rear covers, wherein a cover of the book is slidably mounted into the pocket in the third section.

4,605,246

WRITING BOARD

David J. Haas, Suffern, N.Y., and Alexander J. Autote, Stamford, Conn., assignors to Temtec Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 564,172, Dec. 22, 1983. This application Dec. 18, 1984, Ser. No. 683,032
Int. Cl.[4] B42F *9/00;* **B42D** *1/00*
U.S. Cl. 282—29 A **13 Claims**



1. A writing board for mounting an overlying sheet for writing information thereon and an underlying sheet for storing a copy of the information, the board comprising a board;

a mounting means attached to the board for removably mounting to the board the overlying sheet along an edge of the sheet;

an other mounting means attached to the board for removably mounting the underlying sheet to the board along an edge of the sheet;

wherein the mounting means for the underlying sheet and overlying sheet comprise a plurality of clips, each clip comprising a substantially flat spring secured to the board for engaging and holding the sheet lying on the board and a means for lifting the spring to remove the sheet, the means for lifting comprising a button passing through a bore in the board, its lower end projecting from the lower surface of the board and its upper end in contact with the spring, the button slideable within the bore, whereby when the bore is force downward the button slides upward to raise the spring and release the sheet and when the force is removed from the board the spring engages and holds the sheet.

4. A writing board for mounting an overlying sheet for writing information thereon, the board comprising:

a board having a writing surface thereon; a mounting means attached to the board for removing mounting to the board the overlying sheet along an edge of the sheet;

wherein the mounting means for the overlying sheet comprises at least one clip, the clip comprising a substantially flat spring secured to the board for engaging and holding the sheet lying on the board and means for lifting the spring to remove the sheet;

wherein the means for lifting the spring comprises a button passing through a bore in the board, its lower end projecting from the lower surface of the board and its upper end in contact with the spring, the button slidable within the bore;

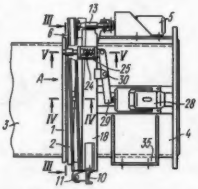
whereby when the board is forced downward, the button slides upward to raise the spring and release the sheet and when the force is removed from the board the spring engages and holds the sheet.

4,605,247

DEVICE FOR SEALING THE DETACHABLE JOINTS OF TUBING ELEMENTS IN PNEUMATIC TRANSPORT FACILITIES

Adolf M. Alexandrov, Moscow; Evgeny F. Bulginov, Moskovskaya; Jury A. Yashin, Moscow; Vladimir Y. Tsernes, Moscow, and Igor I. Volyansky, Moscow, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Transprogress" , Moskovskaya, U.S.S.R.

PCT No. PCT/SU82/00014, § 371 Date Dec. 8, 1983, § 102(e) Date Dec. 8, 1983, PCT Pub. No. WO83/03812, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 21, 1982, Ser. No. 567,865
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—9.2 **2 Claims**



1. A device for sealing detachable joints of two tubing elements in a pneumatic transport facility, said device comprising:

two flanges,

one of the flanges being rigidly affixed on one of the tubing elements,

the other flange being mounted with a clearance on the other tubing element and connected with a mechanical actuator by a kinematic coupling so as to be traversed lengthwise the other tubing element,

said other flange including means for hermetically sealing a joint between said other flange and said other tubing element,

characterized in that:

the kinematic coupling which connects the other flange with the mechanical actuator includes a frame which is pivotally mounted through an angle corresponding to the

amount of the aforementioned clearance about at least one pivot point situated outside the other flange, and

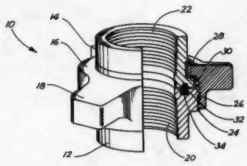
the other flange is mounted on the frame through two hinge joints including pivot pins which are located on opposite sides of the other flange in a plane passing through the geometric axis of the other tubing element.

4,605,248

INSULATING UNION AND METHOD

John W. Goldsmith, Humble, and Paul B. Rullman, Borger, both of Tex., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Jan. 7, 1985, Ser. No. 689,412
Int. Cl.[4] F16L *19/02*
U.S. Cl. 285—52 **10 Claims**



1. An insulating pipe union for preventing electrolytic corrosion in a pipeline, including a metallic tail sub for interconnection with a first length of pipeline, a metallic threaded sub for interconnection with a second length of pipeline, a nut for threaded engagement with said threaded sub and for joining together said tail sub and said threaded sub, an electrically insulating layer covering the end of said tail sub, a first annular groove in an end of said threaded sub, and a first O-ring in said threaded sub groove for sealing engagement with said insulating layer, the improvement comprising:

said electrically insulating layer being bonded to said tail sub for forming a first seal with said tail sub;

a second annular groove in said end of said tail sub; and

a second O-ring in said tail sub groove for sealing engagement between said tail sub and said electrically insulating layer for forming a second seal with said tail sub.

4,605,249

ROTARY COUPLING FOR FLUIDS

Harold R. Klievoneit, Mesa, and Augustine G. Esposito, Phoenix, both of Ariz., assignors to St. Florian Company, Phoenix, Ariz.

Filed Jan. 3, 1983, Ser. No. 454,998
Int. Cl.[4] F16L *17/00*
U.S. Cl. 285—98 **4 Claims**

1. A rotary coupling for conveying a fluid into a rotating hollow shaft from a stationary source of fluid under pressure, said coupling comprising in combination:

(a) rotating means axially and radially fixedly attached to the shaft for directing the fluid into the hollow shaft, said rotating means including a first generally radial annular surface means and at least one passageway having an inlet radially circumscribed by first annular surface means;

(b) annular stationary means connectable to the source of fluid for receiving fluid from the source, said annular stationary means being rotatably mounted upon the shaft to permit rotation of the shaft without corresponding rotation of said annular stationary means;

(c) an annular plenum disposed within said stationary means for receiving the fluid from the source;

(d) a first ring disposed within said annular plenum, said first ring including a first plurality of axially aligned holes extending therethrough;

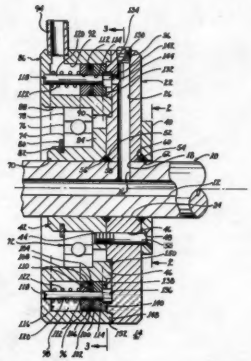
(e) a second ring disposed within said annular plenum, said second ring including a second plurality of axially aligned holes extending therethrough;

(f) dowel means located with said annular plenum for maintaining said first and second plurality of hole in aligned relationship;

(g) means for developing a seal with said plenum intermediate the inner perimeters of said first and second rings and further means for developing a further seal with said plenum intermediate the outer perimeters of said first and second rings to prevent fluid flow intermediate the plenum and the respective inner and outer perimeters;

(h) means for urging said first ring against said second ring;

(i) a second generally radial annular surface means disposed



in said second ring and radially circumscribing said second plurality of holes, said second generally radial annular surface means being in mating relationship with said first generally radially annular surface means to form a seal therebetween in response to the force exerted by said urging means; and

(j) channel means interconnecting said second plurality of holes with one another and with the inlets of each of said passageways in said rotating means for conveying the fluid from said second plurality of holes to at least one of said passageways.

4,605,250

INTERNAL BRAKE FOR DOORS

Angel Simo-Company, Urb. Santa Paula, Calle Géminis, Qta. "Aleromay", El Cafetal, Caracas 1062, Venezuela

Continuation-in-part of Ser. No. 447,890, Dec. 8, 1982, abandoned. This application Aug. 2, 1985, Ser. No. 762,792
Int. Cl.[4] E05C *1/12*
U.S. Cl. 292—171 **3 Claims**

1. An internal door brake comprising:

a door having at least a portion thereof formed with a hollow interior;

a rotatable doorknob provided on said door and having a shaft extending into the hollow portion thereof;

a vertically displaceable plunger provided at the bottom edge of said door directly below said doorknob, said plunger being formed with an inwardly directed step having a projection extending upwardly therefrom, the bottom end of said plunger being provided with a butt of elastomeric material adapted to engage the floor beneath said door;

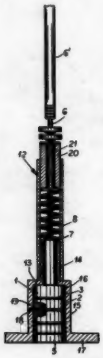
a housing around said plunger forming a guide therefor and having a shoulder engageable with said step for limiting the upward movement of said plunger, said housing being formed with oppositely extending flanges at the lower end thereof engageable with the bottom edge of said door for fixing said housing thereto;

a sleeve provided at the upper end of said housing and extending upwardly from said shoulder around said projection;

a seat in said sleeve spaced from said projection;

a spring disposed between said seat and said projection for biasing said plunger into egagement with said floor;

a cable connected to said plunger and extending axially upwardly through said spring and said seat and connected to said shaft whereby upon rotation of said doorknob said plunger is vertically displaced out of engagement with said floor; and



a pin extending through a wall of said door and said housing and being radially displaceable for engagement in a recess formed in said plunger when said plunger is retracted against said shoulder for maintaining said plunger in a retracted position out of engagement with said floor, said plunger being formed by a plurality of intercalated metal and elastomeric washers, said elastomeric washers contacting the internal walls of said housing for preventing the introduction therein of foreign particles and lateral movement of the plunger.

4,605,251

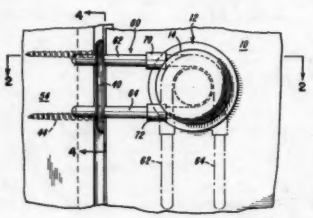
DOOR LOCK

John R. Finlay, 900 Garrison Ave., Kettering, Ohio 45429

Filed Jul. 23, 1984, Ser. No. 633,341

Int. Cl.[4] E05C *1/04*

U.S. Cl. 292—288 **18 Claims**



1. A door lock arrangement comprising a door having a door knob assembly extending therethrough and operably associated with an adjacent door jamb, said door knob assembly having a door knob and a shank portion on one side of the door, said door lock arrangement comprising a

U-shaped member positioned to partially encircle the shank portion of the door knob assembly between the door knob and the door and having the two leg portions of the U-shaped member extending in a generally horizontal direction,

means associated with the door jamb for receiving the leg portions of the U-shaped member for locking the door in one position of the member, and

means positioned on at least one of the leg portions for keeping the U-shaped member in said one position thereof and enabling said member to be moved to another position in an unlocked condition.

4,605,252

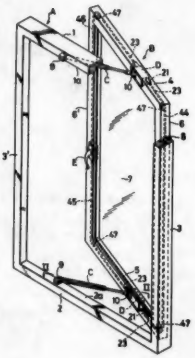
APPARATUS FOR RETAINING A SASH IN OPEN POSITION IN A PROJECTED WINDOW

Yukio Yamamoto, Tokyo, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,551

Int. Cl.[4] E05C *17/30*

U.S. Cl. 292—338 **9 Claims**



1. An apparatus for retaining a pivotally adjustable inner window frame in open position on an outer frame, said apparatus comprising:

(a) a handle having means enabling it to be mounted on the inner frame for angular movement through a predetermined angle between a "retained" position and a "released" position;

(b) at least one retaining unit having means enabling it to be mounted on the outer frame, said retaining unit including an elongated first member having means at one and enabling it to be pivotally connected to the outer frame, and an elongated second member telescopicaly connected to said first member, said second member, in response to the angular movement of said handle between the "retained" and "released" position, having means enabling it to be turnable between a first position in which said second member is longitudinally locked relative to said first member and a second position in which said second member is longitudinally movable relative to said first member; and

(c) at least one transforming unit having means enabling it to be mounted within the inner frame, said transforming unit being operatively connected to said handle and said second member for, in response to the angular movement of said handle, turning said second member between said first and second positions.

4,605,253

CARPET SEAM ROLLER

Martin L. Anderson, 4417 Third Street NE., Minneapolis, Minn. 55428

Filed Oct. 3, 1985, Ser. No. 783,560

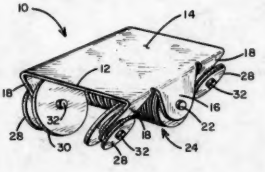
Int. Cl.[4] A47G *27/04*

U.S. Cl. 294—8.6 **5 Claims**

1. A carpet seam rolling tool comprising, in combination:

(a) a roller support blade having a generally planar top

surface and at least two pairs of leg members joined thereto, one of said pair of leg members extending out of the plane of said support plate at right angles with the individual legs of said one pair being disposed along opposite side edges of said support plate in a parallel, spaced apart relationship extending out of the plane of said support plate, the individual legs of said other pair being disposed along said opposite side edges of said support plate at an acute angle with respect to one another;



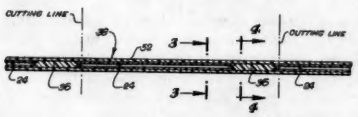
(b) an axle member extending between said first pair of legs;
(c) roller means journaled for rotation on said axle;
(d) separate stub axles affixed to said individual legs of said other pair; and
(e) at least two disc members journaled for rotation on each of said separate stub axles at spaced apart locations, said two disc members being of different diameters such that the lower peripheral edge thereof lie on a straight line generally parallel to said support plate.

4,605,254

REINFORCED HANDLE AND METHOD OF MAKING SAME

Joseph A. Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 20210

Continuation-in-part of Ser. No. 407,818, Aug. 13, 1982, abandoned. This application May 21, 1984, Ser. No. 612,431
Int. Cl.[4] B25G *1/10*
U.S. Cl. 294—57 **17 Claims**



1. A handle for tools such as shovels, hoes, rakes, forks and the like, said handle comprising:
a core having alternately non-reinforcing and reinforcing sections; and
a fiber-resin jacket including a reinforcing bead, formed around said core to securely position and hold said core within said jacket, wherein said reinforcing bead is formed by the position or configuration of said core within the confines of said jacket.

4,605,255

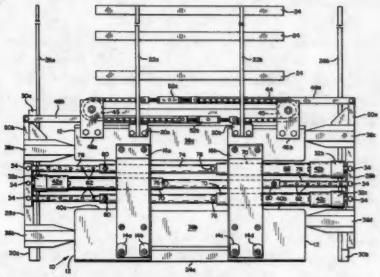
LOAD CLAMP HAVING MOTOR-POWERED SCREW-TYPE CLAMPING ACTUATOR CAPABLE OF ACCURATE POSITIONING AND HIGH CLAMPING FORCE

John E. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Dec. 4, 1984, Ser. No. 677,929
Int. Cl.[4] B66C *1/66*
U.S. Cl. 294—67.33 **12 Claims**

1. A motor-actuated load-engaging clamp adapted to be fitted to a materials handling machine comprising:

(a) a frame adapted to extend vertically and transversely relative to said machine;
(b) a pair of selectively openable and closeable clamp arms extending forwardly from said frame movably mounted thereon for transverse movement relative to said frame and to each other;
(c) elongate screw actuator means, having mutually-cooperating turnable and nonturnable elements, interconnecting said pair of clamp arms for selectively closing them by turning the turnable element in one rotational direction and, alternatively, selectively opening them by turning the turnable element in the opposite rotational



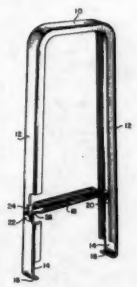
direction so as to move said clamp arms transversely relative to said frame selectively either toward or away from each other;
(d) said turnable element having an axis of rotation extending transversely relative to said frame, and both said turnable element and said nonturnable element of said screw actuator means being mounted for movement transversely relative to said frame in a direction along said axis of rotation; and
(e) motor means for turning said turnable element while permitting said turnable element to move transversely relative to said frame in said direction along said axis of rotation.

4,605,256

LOCKING TOOL FOR MANIPULATION OF ELECTRONIC COMPONENTS

Philip T. Stokoe, North Attleboro, Mass., assignor to Augat Inc., Mansfield, Mass.

Filed Oct. 25, 1984, Ser. No. 664,568
Int. Cl.[4] B25J *1/02*; H05K *13/04*
U.S. Cl. 294—99.2 **9 Claims**



1. A locking tool having defined open and closed positions, for manipulation of electronic components, comprising:
a U-shaped frame having first and second legs constituting

the sides of the U, each leg having an end, each leg end having at least one hook attachable to an electronic component, said frame being biased so said legs tend to spring apart;

said first leg having a T-shaped hole therethrough, said hole having a wider first part contiguous with a relatively narrower second part;

a cross-bar connecting said legs, said cross-bar having a body, a fixed end, and a moveable end, said moveable end being T-shaped and having a wider first section contiguous with a relatively narrower second section connected in turn to said cross-bar body;

said fixed end of said cross-bar being attached to said second leg, opposite the hole in said first leg;

said moveable end of said cross-bar projecting through the hole in said first leg;

the wider first section of said cross-bar moveable end having a bend operative to hold said wider first section of said cross-bar moveable end within the wider first part of said T-shaped hole and to establish the limit to which the tool can open;

the wider part of said hole accommodating the wider first section of said cross-bar moveable end, and the narrower part of said hole accommodating the relatively narrower section of said cross-bar moveable end;

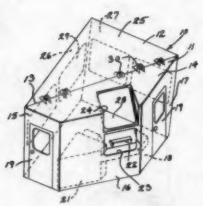
said cross-bar being biased and said T-shaped hole being oriented such that upon squeezing together of the legs of said frame, the narrower second section of said cross-bar moveable end springs into the narrower second part of said T-shaped hole, holding the legs in a closed position to grasp and retain an electronic component until bias-opposing force is applied to said cross-bar, bringing the wider first part of said T-shaped hole and the wider first section of said cross-bar moveable end into alignment and permitting the frame legs to spring apart, releasing the component.

4,605,257

EXPANDABLE OPERATOR'S CAB

David M. Lang, South Milwaukee, and Richard W. Lewitzke, Franklin, both of Wis., assignors to Becor Western Inc., South Milwaukee, Wis.

Filed Jun. 7, 1985, Ser. No. 742,285
Int. Cl.[4] B62D *33/06*
U.S. Cl. 296—26 **9 Claims**



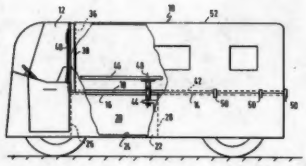
1. A generally rectangular operator's cab or the like, comprising: a cab split diagonally from corner to corner to define two sections that can be moved away from one another in a direction substantially perpendicular to either the side walls, the end walls, or the split line; and a mating insert constructed and arranged to be connected between the separated sections to reestablish an enlarged generally rectangular cab configuration in width or length or a combination thereof.

4,605,258

VEHICLE, ESPECIALLY CAMPING VEHICLE

Roland Höhn, Lipfersbergerstr. 20, D-7118 Ingelfingen, Fed. Rep. of Germany

Continuation of Ser. No. 249,712, Mar. 31, 1981, Pat. No. 4,458,939. This application May 29, 1984, Ser. No. 615,698
Int. Cl.[4] B60P *3/32*
U.S. Cl. 296—164 **2 Claims**



1. In combination, a motor vehicle having a cab with a back wall and a cab floor in a substantially horizontal plane and at leat one seat secured to said floor and a load platform located behind said cab and substantially above the level of said cab floor, said load platform having an opening immediately adjacent the cab and extending rearwardly from said cab, a camping addition means adapted to be releasably fastened on said load platform of the motor vehicle, said camping addition means having a bottom opening which in the mounted condition is aligned with said opening in the load platform of the vehicle immediately adjacent the cab, said camping addition means having a tub-like depression means having an addition floor secured to said bottom opening by sidewall means in the camping addition means and said sidewall means extending beneath said platform to said addition floor, said addition floor being substantially in the same horizontal plane with said cab floor of said cab and forming an increased height for standing in the interior of the addition means and defining a living space in the area of said openings as a rearward extension of said cab, said cab having an opening in said back wall aligned with said tub-like depression means to form a substantially continuous living space between said cab and said addition.

4,605,259

OPERATOR'S CAB FOR CROP HARVESTING MACHINE

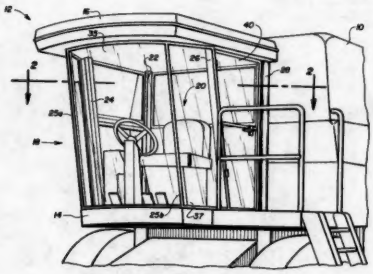
Joseph C. Hurlburt, Lancaster, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed Apr. 15, 1985, Ser. No. 723,425
Int. Cl.[4] B60J *1/02*
U.S. Cl. 296—190 **11 Claims**

1. In an operator's cab for a crop harvesting machine, said cab being mounted on said crop harvesting machine to provide a field of view of a portion of the harvesting operation involving the gathering of crop material from the field, said cab having a floor member; a roof member vertically spaced above said floor member; an operator's station supported on said floor member to position an operator during operation of said crop harvesting machine; a plurality of generally vertically extending support posts supporting said roof member above said floor member, a portion of said support posts being positioned forwardly of said operator's station within said field of view, each said forward support post having an obstructing dimension extending generally perpendicular to the line of sight from said operator's station; an enclosure at least partially

supported by said support posts, extending between said floor member and said roof member and surrounding said operator's station, said enclosure including transparent panels extending between said forward support posts; and glazing elements supported by said forward support posts to engage and support said transparent panels, the improvement comprising:

each said glazing element having a dimension no greater than said obstructing dimension and being positioned on the opposing side of the corresponding said forward support post from said operator's station such that said glazing elements do not obstruct said field of view, at least one of said glazing elements being an elongated extrusion having an attachment portion engageable with the corresponding forward support post to effect attachment therewith and a panel retention portion engageable with the said corresponding transparent panels for support and retention thereof, said extrusion being constructed such that said corresponding transparent panels are positionally fixed without any portion of said corresponding forward support post being positioned therebetween.



4,605,260

VEHICLE DOOR STRUCTURE

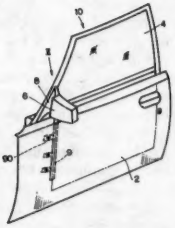
Yozo Sakakibara, Aichi, and Yuji Okamoto, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jan. 17, 1985, Ser. No. 692,182

Claims priority, application Japan, Feb. 7, 1984, 59-16232[U]

Int. Cl.[4] B60J *5/04*

U.S. Cl. 296—201 **8 Claims**



1. A vehicle door structure, comprising:

a door frame having a door window opening therein, said door frame defining upper, front and rear borders of said door window opening, said door frame including an exterior portion and an interior portion, said door frame being mounted on a door plate, said door plate defining a lower border of the door window opening, said door frame incluidng a front portion and a rear portion;

a bracket provided between said front portion of said door frame and said door plate, the bracket being secured onto the door frame, the bracket having a first insert portion where the bracket is fixed by a fixing means onto the door frame and a second insert portion, the first insert portion having a length in the lateral direction of the vehicle which is greater than the length of the second insert portion, said bracket having an exterior surface and an interior surface, said exterior surface cooperating with the exterior portion of the door frame to create a substantially flush exterior surface, said interior surface including said first and second insert portions, said second insert portion being spaced from said door frame by a predetermined distance;

a door frame molding attached to the exterior surface of the door frame, said door frame molding including a notch portion and a hook portion, said notch portion being located at the first insert portion of the bracket, said hook portion being located at the second insert portion of said bracket and being inserted into said predetermined distance defined between said second insert portion and said door frame; and

a rear view mirror secured to said door frame, whereby the door frame molding is securely mounted on the door frame by the hook portion of the door frame molding.

4,605,261

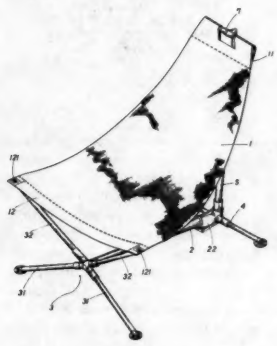
FOLDABLE PORTABLE RECLINING CHAIR

Ching C. Lee, No. 281, Cheng Te Rd., Taipei, Taiwan

Filed Dec. 28, 1984, Ser. No. 687,240

Int. Cl.[4] A47C *4/00*

U.S. Cl. 297—16 **1 Claim**



1. A foldable portable reclining chair having a chair face and a foldable frame, said chair face being of fabric and having an upper selvege with a through hole pocket and a lower sewn rim with a button hole near each of the ends of said sewn rim; said chair frame comprising a main frame rod; front fork link rods fixedly attached to the front end of said main frame rod and rear leg rods and a back support rod pivotally attached to a support seat on the rear end of said main frame rod, said support seat having a seat surface vertical link rod extending upwardly from said support seat and horizontal link rods extending outwardly from said support seat from the opposite sides of said support seat and from the opposite sides of said main frame rod, means pivotally attaching one end of said back support rod to said vertical link rod, sleeve means slidable on said back support rod and over said vertical link rod for locking said back support rod in fixed vertical position when said sleeve means is over said pivotally attaching means on said back support rod to said vertical link rod and for allowing said back support rod to be pivoted when said sleeve means is raised above said pivotally attaching means, means on each of said horizontal link rods for pivotally attaching each of said rear leg rods to said horizontal link rods, respectively, and for locking said respective rear legs in horizontal fixed position

when said chair is unfolded, a pair of front leg rods and a pair of front bracing rods, means for pivotally attaching each of said front leg rods and each of said front bracing rods, respectively, at one of their ends to one of said front link rods, for pivoting said front leg rods and said front bracing rods on said front fork link rods and for preventing said leg rods and said bracing rods from being pivoted and means on said back support rod and said front bracing rods for attachment to said hole pocket and said button holes in said chair face,

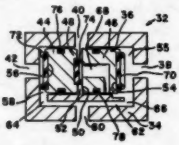
Said means for pivotally attaching said rear legs to said horizontal link rods and said front leg rods and front bracing rods to said front fork link rods including a U-shaped catch ring, a spring hooked and provided on said ring, a stop pin extending through said U-shaped ring and means for elongating said spring when said rods are extended for pivotal movement and for contracting said spring when said rods are released for preventing pivotal movement.

4,605,262

THREE WAY CHECK VALVE

Roy E. Bartholomew, Elyria, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 7, 1984, Ser. No. 648,200
Int. Cl.[4] G05D *11/00*; B60T *15/46*
U.S. Cl. 303—84 A **3 Claims**



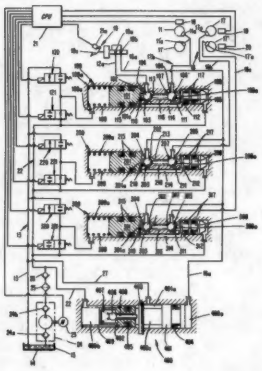
1. Three way check valve comprising a housing having first, second and third inlet ports and an outlet port, said housing defining a bore therewithin, a pair of pressure differential responsive shuttle members slidably mounted in said bore, each of said shuttle members cooperating with a corresponding portion of the bore and with each other to define first, second and third chambers, each of said first, second and third chambers being communicated with a corresponding one of said first, second, and third inlet ports, said shuttle members cooperating wih one another to define said third chamber between the shuttle members, and passage means having branches communicating each of said chambers with the outlet port, said shuttle members being movable in said bore in response to pressure changes at said inlet ports to communicate to said outlet port the chamber communicated with the one of said inlet ports having the highest pressure level, said shuttle members closing communication between the outlet port and the chambers communicated with the other inlet ports, circumferentially extending sealing means carried by each of said shuttle members, each of said sealing means being adapted to control communication between a corresponding one of the inlet ports and said outlet port, each of said sealing means cooperating with its corresponding shuttle member to define circumscribed and non-circumscribed areas on the corresponding shuttle member, one of said circumscribed and non-circumscribed areas defined by each of said sealing means communicating with a corresponding inlet port when the corresponding sealing means blocks communication between its corresponding inlet port and the outlet port, the other of said last-mentioned areas being communicated to the outlet port through a corresponding branch of said passage means when the corresponding sealing means blocks communication between its corresponding inlet port and the outlet port whereby said other area is exposed to the pressure level at said outlet port when the corresponding sealing means prevents communication through the inlet port controlled by the corresponding sealing means.

4,605,263

ANTISKID CONTROL APPARATUS FOR AUTOMOBILES

Masamoto Ando; Hiroaki Takeuchi, both of Toyota; Toyohisa Yamada, Anjo, and Toshihiko Yamanaka, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 1, 1985, Ser. No. 750,135
Claims priority, application Japan, Jul. 2, 1984, 59-137579; Jul. 17, 1984, 59-149225; Jul. 25, 1984, 59-155944; Jul. 25, 1984, 59-155945; Jul. 27, 1984, 59-158430; Aug. 7, 1984, 59-166214
Int. Cl.[4] B60T *8/10*
U.S. Cl. 303—116 **6 Claims**



1. An antiskid control apparatus for use in an automobile having a brake master cylinder and at least one wheel cylinder, comprising:

(a) a fluid pressure circuit for connecting the brake master cylinder and the wheel cylinder;

(b) a cutoff valve disposed in said fluid pressure circuit and adapted to be interposed between the brake master cylinder and the wheel cylinder for hydraulically separating the wheel cylinder from the master cylinder;

(c) a pump for generating a working fluid pressure;

(d) a brake fluid-pressure adjusting piston movable in one direction by a fluid pressure from the wheel cylinder for closing said cutoff valve and for increasing the volume of said fluid pressure circuit between said cutoff valve and said wheel cylinder and also movable in an opposite direction by the working fluid pressure for reducing the volume of said fluid pressure circuit between said cutoff valve to increase the fluid pressure applied to said wheel cylinder and opening said cutoff valve;

(e) a pressure regulating valve for regulating the working fluid pressure generated by said pump by applying a resistance responsive to the fluid pressure imposed by said brake master cylinder to a working fluid flowing from a discharge port of said pump to a reservoir;

(f) a solenoid-operated valve for supplying and discharging said working fluid pressure to and from said brake fluid-pressure adjusting piston;

(g) a wheel speed sensor for detecting the speed of rotation of a wheel associated with said wheel cylinder;

(h) an electronic control circuit for detecting whether said wheel is subject to a skid or not based on a signal from said wheel speed sensor, for controlling said solenoid-operated valve to supply said working fluid pressure to said brake fluid-pressure adjusting piston when said wheel is not subject to a skid, and for controlling said solenoid-operated valve to discharge said working fluid pressure from said brake fluid-pressure adjusting piston when said wheel is subject to a skid;

(i) a motor for actuating said pump, said motor being con-

trolled by said electronic control circuit for being de-energized at least when said wheel is not braked; and

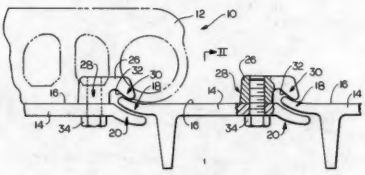
(j) a pressure compensating piston having a pair of pressure bearing areas to which the fluid pressure from said master cylinder and said working fluid pressure are applied, respectively, for generating said working fluid pressure simultaneously with the generation of said fluid pressure from said master cylinder.

4,605,264

TRACK SHOE DEFLECTION STOP FOR ENDLESS TRACK ASSEMBLIES

Andrew J. Tonsor, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 8, 1984, Ser. No. 669,395
Int. Cl.[4] B62D *55/22, 55/28*
U.S. Cl. 305—47 **3 Claims**



1. An endless track assembly, comprising:

a plurality of pivotally interconnected track links;

a plurality of individual track shoes, each having a mounting surface, a leading end portion and a trailing end portion, first and second outer end portions, and each being pivotally connected to an adjacent track shoe by said track links with each leading end portion overlaying an associated trailing end portion of an adjacent shoe;

a replaceable stop member releaseably connected to each of said outer end portions and having a mounting portion in direct contact with and rigidly connected to said shoe mounting surface adjacent said trailing end portion, a deflection stop portion spaced from said mounting portion and overlaying said leading end portion of an adjacent shoe and defining a groove formed between said mounting portion and said deflection stop portion; and

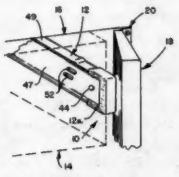
means for releaseably connecting said stop members to said mounting surfaces.

4,605,265

DRAWER SLIDE BUMPER

Walter L. Bessinger, Grand Haven, and Jerry D. Rutledge, Grand Rapids, both of Mich., assignors to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

Filed Aug. 20, 1984, Ser. No. 642,111
Int. Cl.[4] A47B *88/00, 95/00;* **F16C** *29/00*
U.S. Cl. 384—20 **20 Claims**



1. A drawer rail assembly comprising:

a generally C-shaped rail including inner and outer surfaces, a web portion to be secured to a drawer, upper and lower flanges extending transversely from said web portion, and upper and lower V-shaped connector portions extending between said web portion and said upper and lower flanges, respectively, whereby said rail has reverse bends at the two corners of its C-shape; and

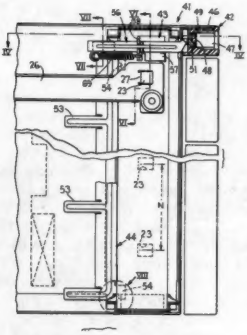
a one-piece bumper mounted on the end of said rail, said bumper including a body portion abutting the end of the rail, upper and lower legs overlying said outer rail surface and interfitting within said upper and lower V-shaped connector portions, respectively, and connector means for preventing relative longitudinal movement of said bumper and said rail.

4,605,266

PIVOTED DRAWER LOCK MECHANISM

Thomas J. McKernan, and Gordon C. Berry, both of Grand Rapids, Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Oct. 19, 1984, Ser. No. 662,670
Int. Cl.[4] E05B *65/46*
U.S. Cl. 312—219 **8 Claims**



1. In a drawer unit having a housing, a plurality of drawers disposed vertically above one another and movably supported on said cabinet for substantially linear movement between open and closed positions, each said drawer having a lock stop thereon, and a locking mechanism for lockingly retaining said drawers in said closed position, the improvement wherein said locking mechanism comprises:

a vertically elongated lock bar disposed within and supported on said housing for swinging movement about a substantially vertical axis between locking and unlocking positions, said lock bar having a plurality of locking tabs fixedly and permanently attached thereto and projecting outwardly therefrom for individual cooperation with the lock stops on the drawers when the latter are in said closed position, said locking tabs being uniformly vertically spaced apart;

spring means normally urging said lock bar to swing inwardly toward said locking position for causing said locking tabs to be positioned in front of the lock stops on the drawers when the latter are in said closed position;

a key-operated rotary lock unit mounted on said housing and being accessible from the exterior thereof, said lock unit including a rotary actuator provided with an eccentric crank thereon; and

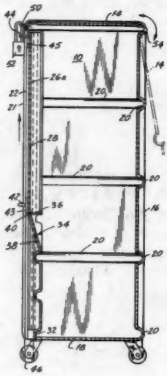
activating means coacting between said rotary crank and said lock bar for positively effecting displacement of the latter into said unlocking position in opposition to the urging of said spring.

4,605,267

SECURITY CART

Isaac Rinkewich, New York, N.Y., assignor to M.I.T. Polycart Corp., New York, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,171
Int. Cl.[4] A47B *96/00*
U.S. Cl. 312—297 **10 Claims**



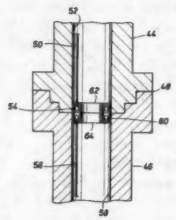
1. A security cart comprising an enclosure having a front with an opening to permit access to the interior of the cart, a fixed panel situated adjacent said opening, a substantially planar flexible panel mounted for movement between a first position aligned with said fixed panel and a second position aligned with said opening, track means along which said movable panel is moved, said track means being situated in a plane spaced from said fixed panel, and means protruding from said fixed panel and intersecting said plane so as to align the central portion of said movable panel and maintain said movable panel in said second position, said movable panel being capable of being flexed such that said central portion is out of alignment with said protruding means to permit said movable panel to be moved from said second position to said first position.

4,605,268

TRANSFORMER CABLE CONNECTOR

Richard A. Meador, Spring, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 439,797
Int. Cl.[4] H01R *15/30*
U.S. Cl. 339—16 C **24 Claims**



1. An electrical connector means, comprising:

a first connector portion including a first electrically conducting coil element partially enclosed by a first, electrical conducting means and defining a first axially open passageway;

a second connector portion including a second electrically conducting coil element partially enclosed by a second, electrical conducting means and defining a second axially open passageway; and

conductive coupling means for current coupling said first and second coil elements defined by connection of said first and second electrical conducting means for enclosing said first and second coil elements in an electrical conducting path and aligning said first and second passageways,

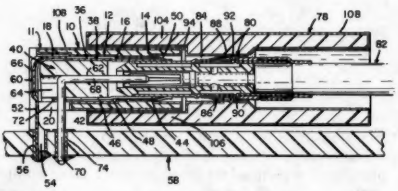
wherein said first and second coil elements are mutually electrically isolated one from the other within said conductive coupling means.

4,605,269

PRINTED CIRCUIT BOARD HEADER HAVING COAXIAL SOCKETS THEREIN AND MATABLE COAXIAL PLUG HOUSING

Thomas S. Cohen, Camp Hill, and Douglas F. Finan, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 20, 1984, Ser. No. 622,615
Int. Cl.[4] H01R *9/05, 9/09*
U.S. Cl. 339—17 LC **4 Claims**



1. A printed circuit board header of coaxial sockets, comprising: a dielectric housing having a series of passageways extending therethrough; coaxial sockets disposed in respective passageways, each of said coaxial sockets including an outer contact member, a dielectric member and a center contact member, said outer contact member being a tubular member, said dielectric member being disposed in said tubular member and said center contact member having a first section and a second section, said first section disposed in said dielectric member and including a first contact section extending outward from a front surface of said dielectric member coaxial with said tubular member, said second section extending outwardly from said tubular member for electrical connection with a signal path on a printed circuit board, said tubular member including a rear contact element extending outwardly from a rear end of said tubular member and extending substantially parallel to said second section for electrical connection with a ground plane on the printed circuit board; securing means provided by the tubular members and the passageways for releasably securing the coaxial sockets in the passageways; and mounting means on said housing for mounting the housing on the printed circuit board, said dielectric member has a slot in which said second section of said center contact member is disposed so that said second section is at right angles to said first section.

4,605,270

COVER FOR ELECTRICAL OUTLET

Nejdeh Aslizadeh, 1050 Mont Royal Blvd., North Vancouver, B.C., Canada

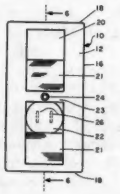
Filed Jan. 22, 1985, Ser. No. 693,291
Int. Cl.[4] H01R *13/447*
U.S. Cl. 339—40 **12 Claims**

1. In a cover for an electrical outlet having a pair of receptacles adapted to receive prongs of an electrical plug, the improvement comprising in combination:

a pair of spaced apart rectangular openings in front wall of said cover;

a protective closure plate mounted within each of said openings for slidable upward and downward movement;

a spring-actuated blocking plate movable rearwardly or frontwardly within each of said openings, said blocking plate being provided with a plurality of coil springs affixed to rear wall thereof and positioned in contact with inner surface of rear wall of said cover;



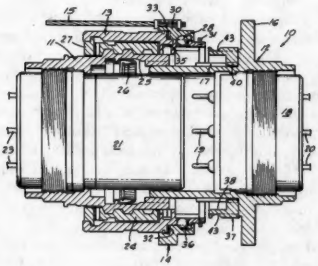
said closure plate being positioned in the same plane as said front wall and said blocking plate whereby said receptacles are covered when said cover is in closed position and said closure plate is overlying said blocking plate when slidably moved to open position to expose said receptacles to insertion of said prongs therein.

4,605,271

REMOTE QUICK DISCONNECT FOR BREECH-LOK

Edgar Burns, Los Angeles, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Mar. 11, 1985, Ser. No. 710,285
Int. Cl.[4] H01R *13/62*
U.S. Cl. 339—45 M **6 Claims**



1. A rapidly releasable connector having a receptacle receivable within a plug shell, and a hollow coupling ring rotatably received on the plug shell for moving the plug shell and receptacle toward and away from each other depending upon the direction of rotation, comprising:

said coupling ring having at least one opening extending radially therethrough at a point spaced inwardly from the outer end;

ringlike means slidingly received onto the outer end portion of the coupling ring and movable from a first position presenting a surface covering the coupling ring opening to a second position locating a recess or the ringlike means directly opposite said openings;

separable end piece means fitted within the open end of the coupling ring and having a recess on an outer surface located directly opposite the opening in the coupling ring, said separable end piece means including a radially inwardly directed flange for engaging the receptacle during mating of the plug shell and receptacle; and

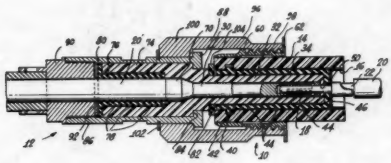
a ball located within the coupling ring opening and having parts thereof lockingly extending into the separable end piece means when the ringlike means inner surface is located directly opposite the coupling ring opening, which ball is free to move entirely into the coupling ring opening when the ringlike means recess is directly opposite the coupling ring opening releasing the separable end piece means from the coupling ring.

4,605,272

HIGH VOLTAGE ELECTRICAL CONNECTOR

Melvin K. Myers, and Frank Pospisil, both of Los Angeles, Calif., assignors to Reynolds Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 142,976, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 936,642, Aug. 24, 1978, abandoned. This application Feb. 1, 1985, Ser. No. 696,899
Int. Cl.[4] H01R *13/52*
U.S. Cl. 339—60 M **20 Claims**



1. In a high-voltage electrical connector having a receptacle assembly and a plug assembly, each assembly having at least one electrical contact pin, the improvement comprising:

a receptacle body of relatively non-resilient dielectric material having a cylindrical inner surface;

a first cylindrical dielectric sleeve, of smooth, relatively non-resilient material, included in the plug assembly and encasing a first contact pin in the plug assembly; and

a sedond cylindrical dielectric sleeve, of resilient and relatively thin-walled material, installed in said receptacle body surrounding a second contact pin therein, said second dielectric sleeve's wall thickness being substantially less than its inner radius;

wherein said second cylindrical dielectric sleeve includes a plurality of inner raised annular portions on its inner surface and an equal plurality of outer raised annular portions on its outer surface, each of said inner raised annular portions being located immediately opposite a corresponding outer raised annular portion, along a line normal to the sleeve axis; and

wherein said first dielectric sleeve is dimensioned to slide tightly but easily inside said second dielectric sleeve, such that oney the inner and outer raised annular portions of said second dielectric sleeve contact the respective first dielectric sleeve and receptacle body, and such that the inner and outer raised annular portions are compressed directly towards each other and substantially uniformly in all radial directions, against said receptacle body, to form a first seal between said first and second dielectric sleeves and a second seal between said second dielectric sleeve and the inner surface of said receptacle body, thereby completing a continuous dielectric seal between the contact pins and said receptacle body, without the necessity of an axial force to maintain the seal.

4,605,273

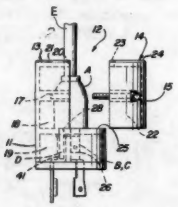
PARALLEL-BLADE/TWIST-LOCK ADAPTER PLUG

Paul D. Horton, 730 W. Washington Ave., Orange, Calif. 92668

Filed Dec. 17, 1984, Ser. No. 682,161
Int. Cl.[4] H01R *13/639*
U.S. Cl. 339—75 P **4 Claims**

1. An adapter plug adapted to provide electrical connections between corresponding terminals of a parallel blade male connector plug and a female twist-lock connector having arcuate, circularly arranged connector slots, said adapter plug comprising:

a. an elongated cylindrical base having parallel, transversely disposed upper and lower faces,
b. a plurality of female connectors adapted to insertably receive male connector terminals from said parallel blade male connector plug, said female connectors being disposed axially downward from said upper face of said base,
c. a plurality of arcuate, circularly arranged twist-lock connector blades extending axially downward from said lower face of said base,
d. a plurality of electrical conductors separately connecting each said female connector to a separate twist-lock connector blade, and



e. means for loosenably clamping said parallel blade male connector plug to said adapter plug base, said clamping means comprising:
(i) a fixed, hollow semi-cylindrical extension continuous with a semi-cylindrical face of said base and extending longitudinally upward from the plane of said upper transverse face of said base,
(ii) a removable hollow semi-cylindrical section continuous with the opposite semi-cylindrical face of said base and extending longitudinally upward from the plane of said upper transverse face of said base, and
(iii) means for removably fastening said fixed hollow semi-cylindrical extension and said removable hollow semi-cylindrical section together.

4,605,274

CABLE CONNECTING DEVICE

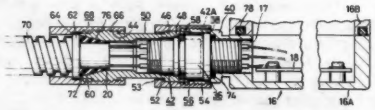
Souji Ichikawa, Sagamihara, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,247

Claims priority, application Japan, Sep. 9, 1983, 58-166321; Sep. 9, 1983, 58-166322

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—89 R **32 Claims**



1. A cable connecting device for detachably, electrically connecting a flexible cable protected by a flexible electric wire tube to a wiring in a component movable in a moving direction within a predetermined scope relative to a main body, the component having a first portion opposite the main body and a second portion disposed between the first portion and the main body, the first portion defining an outer periphery at a travelling distance from the main body in a normal direction perpendicular to the moving direction, wherein at least the vicinity of a connecting portion of the flexible cable of said component is formed into a hermetically sealed construction except for an opening for an electric wiring, said cable connecting device comprising:

a first connector connected to an electric circuit in said component via the opening for the electric wiring and having a first end portion on a first connecting side opposite said component, the first connector having at least one electric contact point;

a first cylindrical member formed integrally with said component, enclosingly supporting the first connector with its first end portion on the first connecting side being exposed, an outer periphery of the first cylindrical member being formed with a first threaded portion;

a second connector capable of being coupled to the first connector and having at least one opposite electric contact point connected to the cable;

a second cylindrical member enclosingly supporting an end portion of the cable and having a second end portion on a second connecting side opposite the cable, the second connector being connected to the second cylindrical member except for the second end portion on the second connecting side of the second connector, an end face of the second cylindrical member being adapted to abut against an end face of the first cylindrical member when the second connector is coupled to the first connector, the second cylindrical member including

a second threaded portion formed on an outer periphery of a third end portion on the second cylindrical member opposite the second end portion and adjacent the cable, the second threaded portion being smaller in diameter than the first threaded portion,

an outer stepped portion formed on an outer periphery of the second end portion, the outer stepped portion being larger in diameter than the second threaded portion and smaller in diameter than the first threaded portion, and

a first inner stepped portion formed on an inner periphery of the second cylindrical member, the first inner stepped portion being smaller in diameter than a maximum outer diameter of the second connector enclosed therein for regulating the movement of the second connector toward the cable;

a first tightening tubular member coupled onto the outer periphery of the second cylindrical member, the first tightening tubular member having an end portion adjacent the cable and an opposite end portion adjacent the second connector, the first tightening tubular member including

a second inner stepped portion having an inner periphery of the end portion adjacent the cable being passable through the second threaded portion, smaller in diameter than the outer stepped portion, and adapted to abut against the outer stepped portion for form a lock against dislodging in the direction of the end portion adjacent of the second connector, and

a third threaded portion capable of being threadably coupled to the first threaded portion of the first cylindrical member when the first cylindrical member and the second cylindrical member are in abutting contact with each other;

a first seal member interposed between opposing outer peripheral end faces of the first connector and the second connector;

a second seal member interposed between the inner periphery of the second cylindrical member and an outer periphery of the cable enclosed by the second cylindrical member to seal a space formed therebetween at a position of the third end portion of the second cylindrical member; and

a second tightening tubular member including a third inner stepped portion engageable with a stop member on an outer periphery of the cable to form a lock against dislodging the cable and a fourth threaded portion threadably coupled to the second threaded portion of the second cylindrical member, the third inner stepped portion engaging the stop member when the fourth threaded portion is threadably coupled to the second threaded portion to push the second seal member between the inner periphery of the second cylindrical member and the outer periphery of the cable, the outer periphery of both the first and

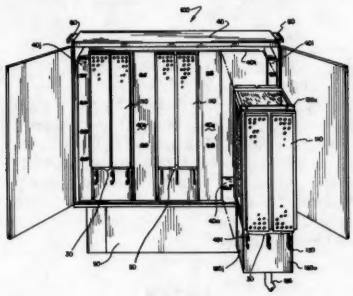
second tightening tubular members defining first and second distances, respectively, from the main body in the normal direction, the first and second distances being less than the travelling distance of the component from the main body, the first portion of the component being detachable from the second portion and including a seal and the first cylindrical member.

4,605,275

MODULAR ENCAPSULATED CROSS-CONNECT TERMINAL UNIT

Laszlo Pavel, Palatine, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Mar. 5, 1985, Ser. No. 708,217
Int. Cl.[4] H05K *5/00*
U.S. Cl. 339—119 R **12 Claims**



2. A modular encapsulated cross-connect terminal unit for mounting in a cross-connect terminal, said terminal forming a housing for receiving said modular unit, said unit comprising:

I. first means comprising:

(a) an open top enclosure of predetermined shape, said enclosure having a bottom having an opening therein, said enclosure also having a top peripheral edge;

(b) first and second panels, at least said first panel being connected by hinge means to an associated portion of said top peripheral edge, said first panel having at least one hollow section therein and being mounted for pivotal motion about said hinge means between vertical and horizontal positions, said second panel being connected by connection means to an associated portion of said top peripheral edge, said connection means allowing said second panel to be in at least said vertical position;

(c) at least one connector block having a multiplicity of connection means on its front and rear faces, said block being mounted in said at least one hollow section such that said rear face is projecting upwardly when said first panel is in said horizontal position;

(d) a cable stub having a multiplicity of cable pairs therein, said stub being mounted to said bottom such that said cable pairs project through said opening, at least some of said cable pairs being connected to said rear face connection means in a predetermined arrangement; and

(e) means connected to both said first and said second hinged panels for holding said first and said second hinged panels in said vertical position, said rear face connection means being encapsulated and said enclosure filled with encapsulating material to encapsulate said stub after said cable pairs are connected to said rear face; and

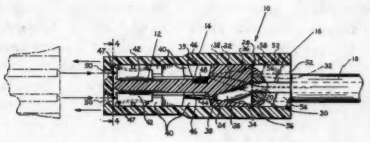
II. second means attached to said first means for mounting said terminal unit in said terminal with the cable stub extending through an opening in said terminal.

4,605,276

TWO ROW COAXIAL CABLE CONNECTOR

Alexander W. Hasircoglu, Lancaster, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 480,594, Mar. 30, 1983, abandoned. This application Mar. 26, 1985, Ser. No. 716,515
Int. Cl.[4] H01R *13/50*
U.S. Cl. 339—176 MF **6 Claims**



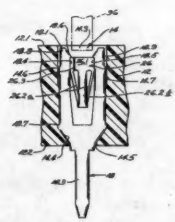
1. An electrical connector for coax cable having repeating units of a poly(tetrafluoroethylene) jacket surrounding a central signal conductor and at least one drain wire exterior to the jacket, the connector comprising an interior dielectric housing and an exterior dielectric housing, the interior housing containing entrance and exit ends, the ends separated by channels for guiding and receiving signal and drain wires and slots for retaining electrical terminals, the entrance end having two rows of openings, one above the other, leading into conical shaped channels, said channels engaging and pushing back the jacket surrounding the signal conductor as the cable is inserted, one row receiving a signal wire surrounded by the poly(tetrafluoroethylene) jacket in each opening and the other row receiving at least one drain wire in each opening, the exit end having two rows of open slots, one above the other, each slot containing an electrical terminal having a first and second contact end, one row of terminals terminating the drain wires and the other row terminating the signal wires free of the jacket at the first end, the second end being available for another electrical termination, the exterior housing having two upright side walls joined to two horizontal top and bottom members enclosing a cavity of sufficient dimension to slidably engage and retain the interior housing.

4,605,277

CONNECTOR AND METHOD OF MAKING

Pietro DeFilippis, Aversa; Amedeo Salvatore, and Mario Biscione, both of Naples, all of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 11, 1985, Ser. No. 710,347
Claims priority, application Italy, Jun. 13, 1984, 48391 A/84
Int. Cl.[4] H01R *11/22*
U.S. Cl. 339—262 R **9 Claims**



1. A connector comprising an insulating body having an opening extending through the body, an electrically conductive retainer formed of sheet metal having a pair of spaced wings lying in a common plane extending from the retainer in one direction so that surface portions on the respective sheet metal wings are disposed in spaced facing relation to each other and having a post unitary therewith extending from the retainer in an opposite direction, the retainer being attached to

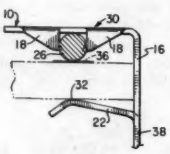
the body in the body opening with the retainer post extending from the opening at one side of the body to be connected in an electrical circuit and with the retainer wings disposed in fixed position in the opening adjacent an opposite side of the body with said plane of the retainer wings extending along a longitudinal axis of the opening, and a spring clip having an interrupted ring loop of resilient, electrically conductive sheet metal spring material disposed between said retainer surface portions having portions of the loop biased into resilient electrical engagement with the respective sapced facing surface portions of the retainer wings to position the interrupted ring loop to extend in a plane normal to the longitudinal axis of the opening and to said plane of the retainer wings, the spring clip having portions of the spring clip in juxtaposed relation to each other to make detachable, resilient electrical engagement to a terminal inserted within the interrupted ring loop to connect the terminal in said electrical circuit.

4,605,278

SOLDER-BEARING LEADS

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, College Point, N.Y.

Filed May 24, 1985, Ser. No. 737,830
Int. Cl.[4] H01R *4/02*
U.S. Cl. 339—275 B **9 Claims**



1. A solder-bearing lead adapted to be soldered to a conductive surface, comprising

an elongated strip-like body portion,

said body portion having on each edge thereof a pair of spaced laterally extending tabs defining an opening therebetween,

said openings being laterally aligned transversely of said strip,

said pairs of tabs being bent substantially perpendicular from the body portion strip to align said openings to form a channel transversely of said strip, with said body portion forming a floor for said channel,

a solder mass in said channel and bordered by said pairs of tabs,

said tabs being bent inwardly of said channel to retain said solder mass therein,

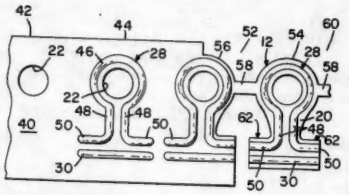
said solder mass having a dimension extending away from said body portion greater than the extent of said tabs, whereby said solder mass extends outwardly from said channel and may be placed in direct contact with the conductive surface to which said lead is to be soldered, while spacing said tabs from said surface and upon melting said solder mass, said tabs are permitted to move into contact with said conductive surface to make electrical contact therewith and to be retained in such contact upon re-solidification of said solder mass.

4,605,279

ELECTRICAL TERMINAL

James L. Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 23, 1985, Ser. No. 790,545
Int. Cl.[4] H01R *4/26*
U.S. Cl. 339—276 R **20 Claims**



1. An electrical terminal, comprising

contact section means at one end for being attached to an electrical device;

wire receiving means at another end for receiving an electrical wire therein and being crimped down around said wire to establish electrical contact therewith; and

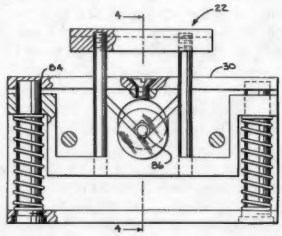
continuous rib means coined on said contact section means and said wire receiving means, said rib means providing rigidity to said contact section means and providing concentrated pressure points against the wire crimped in said wire receiving means.

4,605,280

UNIVERSAL LIGHT CABLE ADAPTER FOR LIGHT SOURCE

Stanley Welber, Palatine, and Nick Lakatos, Des Plaines, both of Ill., assignors to Eder Instrument Company, Inc., Chicago, Ill.

Continuation of Ser. No. 400,343, Jul. 21, 1982, abandoned. This application May 20, 1985, Ser. No. 736,517
Int. Cl.[4] G02B *6/36, 7/26*
U.S. Cl. 350—96.20 **7 Claims**



1. An adapter for coupling optical fiber cables having connectors of differing types and sizes to a light source, said adapter comprising:

a frame mountable on said light source in front of the light of the source,

a cable holder mounted on said frame and having a first stationary surface element capable of receiving an optical fiber cable connector;

a cable support operatively associated with said cable holder and including a second surface element disposed in opposition to said first surface element and capable of receiving the optical fiber cable connector, said cable support relatively movable with respect to said cable holder between a first unclamped position and a second clamped position so that said second surface element coacts with said first

surface element to clamp therebetween connectors of differing types and sizes inserted in said adapter;

spring means biasing said second surface element toward said second clamped position for retaining the optical fiber cable connector in said adapter;

actuator means for moving said cable support against the force of said spring means; and

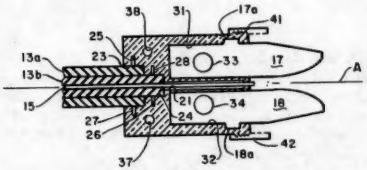
stop means for preventing a connector from engaging and possibly damaging the light source when inserted between said cable holder and cable support, said stop means includes a light transmitting disc member mounted on said cable support for movement therewith and positionable in axial alignment with said connector between said connector and said light source when said connector is retained in said adapter.

4,605,281

SELF-ALIGNING FIBER OPTIC CONNECTOR

Byron A. Hellewell, 1074 W. 1290 South, Syracuse, Utah 84041

Filed Jan. 17, 1984, Ser. No. 571,627
Int. Cl.[4] G02B *6/38*
U.S. Cl. 350—96.21 **2 Claims**



1. A connector for a fiber optic cable having a light-conducting core and a sheath surrounding said core, comprising:

(a) a substantially cylindrical body member having first and second endfaces and a coaxial central bore therethrough sized for receiving a corresponding lengthwise portion of said core from which said sheath has been removed;

(b) means for attaching said sheath to said body member near said first endface;

(c) a pair of substantially identical alignment projections disposed on said second endface in diametrically opposed relationship to said central bore;

(d) a pair of substantially identical fully enclosed alignment slots defined in said second endface, and disposed in diametrically opposed relationship to said central bore and in quadrature to said alignment projections, said fully enclosed slots defined in size and shape to receive projections substantially identical to that defining said alignment projections;

(e) wherein the combination of said body member, alignment projections and slots define a geometric shape having 180° rotational symmetry about the cylindrical axis of symmetry of said body member;

(f) wherein said body member is formed of two substantially identical half-cylindrical sections joinable along a plane including said axis, each section having corresponding first and second endfaces, said second endface of each section including one alignment slot defined therein, and further comprising means for joining said half-cylindrical sections along said plane; and,

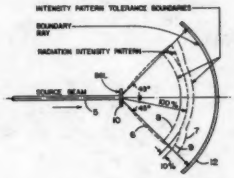
(g) wherein each alignment projection extends backwards within each half-cylindrical body member section and includes mating holes and mating posts for secure and accurate positioning in relation to each half-cylindrical section.

4,605,282

LINE LENS AND METHOD OF DESIGN THEREFOR

Paul L. Fox, Whittier, Calif., assignor to Pyramid Optical, Inc., Irvine, Calif.

Filed Dec. 22, 1983, Ser. No. 564,562
Int. Cl.[4] G02B *3/02*
U.S. Cl. 350—167 **8 Claims**



1. A lens apparatus of the type receiving a collimated beam of input radiation for transmitting a narrow sheet of output radiation of substantially uniform intensity over an angular range of approximately + and −45 degrees relative to the input radiation beam; the apparatus comprising:

an optically transparent material having an index of refraction no greater than 1.6 and having;

a lenticulated receiving surface; and

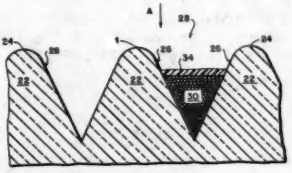
a lenticulated transmitting surface; wherein the lenticulated contours of said lenticulated receiving surface are alternately convex and concave, the convex contours being wider than the concave contours.

4,605,283

BLACKENED OPTICAL TRANSMISSION SYSTEM

Douglas A. Stanton, Ossining, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 567,022, Dec. 30, 1983, abandoned. This application Sep. 26, 1985, Ser. No. 780,706
Int. Cl.[4] G03B *21/60*
U.S. Cl. 350—127 **39 Claims**



1. An optical transmission system, comprising:

a transparent substrate having a front surface;

a pair of elongated mutually parallel transparent ribs provided on the front surface, the ribs being laterally spaced to form a groove therebetween, and

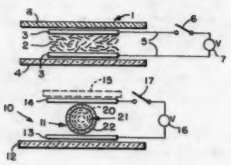
means for absorbing visible light, the means comprising an amount of light-absorbent discrete particles disposed in the groove, the amount being disposed such that the discrete particles disposed immediately adjacent to the transparent ribs are loose, whereby reflection of visible ambient light impinging on the system is reduced.

4,605,284

ENCAPSULATED LIQUID CRYSTAL AND METHOD

James L. Fergason, Atherton, Calif., assignor to Manchester R & D Partnership, Cleveland, Ohio

Division of Ser. No. 477,242, Mar. 21, 1983, which is a continuation-in-part of Ser. No. 302,780, Sep. 15, 1981, Pat. No. 4,435,047. This application Jun. 29, 1984, Ser. No. 626,425
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—334 28 Claims



1. Liquid crystal apparatus, comprising liquid crystal material, and containment means for inducing a generally non-parallel alignment of said liquid crystal material which in response to such alignment at least one of scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption, said liquid crystal material and containment means comprising a dispersion thereof.

18. Liquid crystal material and a medium for containing discrete quantities of such liquid crystal material, said material having positive dielectric anisotropy, and wherein the difference between the ordinary index of refraction of said liquid crystal material and the index of refraction of said medium being no greater than 0.03.

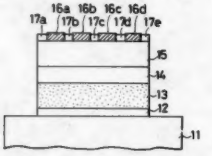
25. A method of making encapsulated nematic liquid crystals, comprising mixing at least an encapsulating medium and a nematic liquid crystal material, and further comprising selecting such liquid crystal material and such encapsulating medium such that the liquid crystal material has a positive dielectric anisotropy and the dielectric constant of such encapsulating medium is at least as great as the lower dielectric constant of such liquid crystal material and such lower dielectric constant is from about 3.5 to about 8.

4,605,285

ELECTROCHROMIC DEVICE

Ryoji Fujiwara, Sagamihara, and Isamu Shimizu, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,490
Claims priority, application Japan, Apr. 1, 1983, 58-57211; Apr. 1, 1983, 58-57212; Apr. 1, 1983, 58-57213
Int. Cl.[4] G02F 1/17
U.S. Cl. 350—357 20 Claims



1. An electrochromic device comprising an oxidative-coloration layer between a pair of electrodes, said oxidative-coloration layer being composed of a film of a metal oxyhydroxide represented by the formula:

$$MOx(OH)y$$

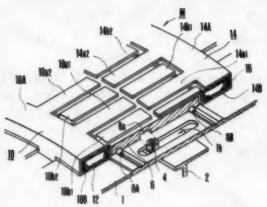
wherein M is a metal of group VIII of the periodic table, x is a number satisfying $0<x<1$, and y is a number satisfying $1<y<2$.

4,605,286

MOTOR BUILT-IN LENS MOUNTING

Akiyasu Sumi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,413
Claims priority, application Japan, May 20, 1983, 58-89781; May 20, 1983, 58-89782; May 20, 1983, 58-89783
Int. Cl.[4] G02B 7/04
U.S. Cl. 350—429 9 Claims



1. A lens assembly comprising:

(a) a body tube;

(b) lens holder means containing focusing lens means defining an optical axis;

(c) motor means for moving said lens holder means, said motor means including:

a hollow cylindrical field magnet rotatable about said optical axis and having a camming groove for determining the amount of axial movement of said lens holder means, and

a field coil and a field yoke for producing an electromagnetic force by which said field magnet is driven to rotate stepwise; and

(d) a drive connection member on said lens holder menas and extending into a cross point of a longitudinally elongated slot provided in said body tube and said camming groove of said field magnet;

(e) said field yoke including a first yoke member holding a first field coil and having pole teeth axially extending over the outer periphery of said field magnet, and a second yoke member positioned on the opposite side of said field magnet to said first yoke member, holding a second field coil and having pole teeth axially extending over the outer periphery of said field magnet in displaced relation to the pole teeth of said first yoke member by a predetermined pitch in a circle with its center at said optical axis.

4,605,287

SURGICAL MICROSCOPE FOR TWO SURGEONS

Walter H. Lang, Königsbronn; Klaus Biber, Aalen; Ulrich Lemcke, and Ulrich Sander, both of Heidenheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Sep. 5, 1984, Ser. No. 647,623
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333471
Int. Cl.[4] G02B 21/18
U.S. Cl. 350—513 7 Claims

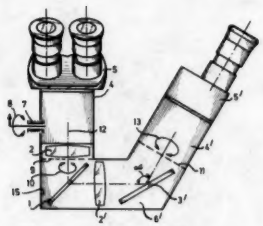
1. A surgical microscope device for viewing an operating region of the body by two surgeons for performing surgery thereon, the device comprising:

a first microscope for an operating surgeon having a first objective defining a first optical axis;

a second microscope for an assistant surgeon having a second objective defining a second optical axis;

optical splitter means common to both said microscopes for splitting the light from the operating region and directing the light beams split therefrom to said objectives, respectively, thereby defining respective viewing beam paths for said microscopes;

an opto-mechanical component for accommodating said splitter means therein and for mounting said second microscope to said first microscope so as to permit said



splitter means and said second microscope to be conjointly rotatable about said first optical axis relative to said first microscope whereby the assistant surgeon can change the viewing direction through said second microscope relative to the viewing direction of the operating surgeon through said first microscope; and,

said second microscope having occular means mounted thereon so as to be rotatable about said second optical axis thereby permitting the assistant surgeon to adapt the position of said ocular means to the new viewing direction.

4,605,288

ZOOM INTERLOCKING MECHANISM FOR BINOCULAR

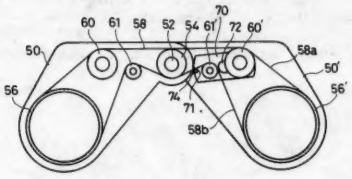
Akihiro Shimofuruta, Saitamaken, Japan, assignor to Kamakura Koki Kabushiki Kaisha, Japan

Filed Apr. 19, 1985, Ser. No. 725,119

Claims priority, application Japan, Apr. 20, 1984, 59-57396[U]

Int. Cl.[4] G02B *7/06, 23/00*

U.S. Cl. 350—552 **3 Claims**



1. A zoom interlocking mechanism for a binocular having a pair of support arms, each provided with a telescopic optical system having an associated zoom mechanism, annular pulleys associated with respective zoom mechanisms, a central shaft affixed to one of said support arms, the other of said support arms being mounted on said central shaft for rotation within a predetermined angular range about said shaft, a central pulley coaxially mounted on said central shaft, tightening pulleys interposed between said central pulley and said annular pulleys, and a length of belt extending along a path defined by said central pulley, said annular pulleys and said tightening pulleys, said zoom interlocking mechanism comprising

an adjustment plate pivotally mounted on said other of said support arms, two of said tightening pulleys being rotatably mounted on said adjustment plate at eccentric positions and biased so as to deflect portions of said belt extending between said central pulley and said annular pulley away from the outer tangential lines connecting said central pulley to said annular pulley, said adjustment plate being operatively associated with said one of said support arms in a manner whereby said adjustment plate is rotated as said support arms are rotated around said central shaft, that one of said tightening pulleys mounted on said adjustment plate and acting on the belt portion of a tension side of said belt being moved together with said adjustment plate so as to urge said belt portion toward said outer tangential lines, while the other of said tightening pulleys mounted on said adjustment plate acting on the belt portion of a slack side of said belt is moved together with said adjustment plate so as to urge said belt portion of said slack side away from said outer tangential lines, thereby maintaining the two belt portions at the same tension before, during and after adjustable rotation of said support arms around said central shaft for varying the interoptical axis distance of said telescopic optical systems.

4,605,289

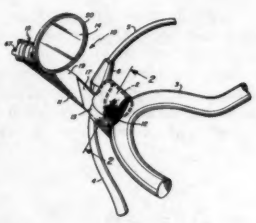
BICYCLE MIRROR ASSEMBLY

Edward H. Levine, and F. E. Dixon Newbold, both of Providence, R.I., assignors to Rhode Gear USA, Providence, R.I.

Filed Oct. 5, 1984, Ser. No. 658,181

Int. Cl.[4] G02B *7/18*

U.S. Cl. 350—606 **16 Claims**



1. A mirror assembly for attachment to a bicycle brake lever stem on drop handlebars or a handgrip on upright handlebars, said assembly comprising:

a rigid arm having first and second sides and distal and proximal ends;

a rigid hook extending from one edge of said arm between said proximal and distal ends, said hook being disposed adjacent said proximal end and positionable around the stem of a bicycle brake lever;

a means for attaching said hook to the stem;

a mirror mounted on said arm adjacent said distal end; and

a mirror mounting means for mounting said mirror on said arm, said mirror mounting means being attachable to each of the first and second sides of said arm for mounting said mirror on either of said first and second sides.

4,605,290

COHERENT LIGHT VERGENCE VARYING APPARATUS

Richard H. Burns, North Hollywood, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 22, 1985, Ser. No. 757,391

Int. Cl.[4] H01S *3/081;* **G02B** *5/04, 5/08, 17/00*

U.S. Cl. 350—619 **6 Claims**

1. An apparatus for varying the vergence of a beam of light from a laser comprising:

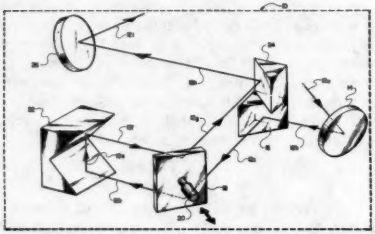
first focusing reflector means for receiving said beam of light and reflecting it angularly back on a different path;

first flat reflector means for receiving said beam of light

from said first focusing reflector means and reflecting it angularly back;

moveable reflector means linearly moveable along an axis between two positions for receiving said beam of light from said second reflector means throughout the linear movement between said two positions and reflecting said beam of light angularly back;

return reflector means for receiving said beam of light from said moveable reflector means and reflecting it back to said moveable reflector means in an offset path parallel to that of said beam of light received and for reflection off said moveable reflector means;



second flat reflector means for receiving said beam of light reflected off said moveable reflector means and reflecting it angularly back; and

second focusing reflector means for receiving said beam of light from said second flat reflector means and reflecting it in a predetermined direction whereby during operation of said apparatus axial movement of said moveable reflector means changes the length of the focal path through said apparatus with a corresponding change in the vergence of said beam of light reflected from said second focusing reflector means.

4,605,291

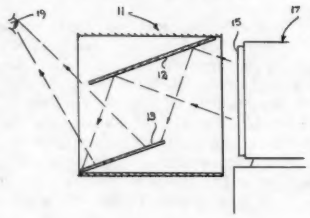
CATHODE RAY TUBE SCREEN VIEWING AID

Thomas A. Jolly, 352 Loma Vista, El Segundo, Calif. 90245

Filed Oct. 24, 1984, Ser. No. 664,165

Int. Cl.[4] G02B *7/18, 17/06*

U.S. Cl. 350—623 **14 Claims**



1. A viewing device for facilitating the viewing of images on a screen comprising

first and second reflecting mirrors,

support means, and

means for adjustably mounting said mirrors on the support means for vertical, lateral and pivotal positioning relative to each other and said screen so as to double reflect the screen images to a desired convenient viewing point comprising a support assembly for supporting each of said mirrors, a pair of oppositely positioned side plates having elongated opposing slots formed therethrough, and means for supporting said support assemblies for selective positioning along said slots and pivotally relative to said plates.

4,605,292

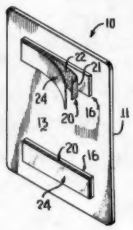
MIRROR WITH ADHESIVE/MAGNETIC MIRROR SUPPORTING STRIPS

Edwin J. McIntosh, Summersville, W. Va., assignor to Bright Of America, Inc., Greenbrier, W. Va.

Filed Jun. 28, 1985, Ser. No. 749,722

Int. Cl.[4] G02B *7/18*

U.S. Cl. 350—641 **7 Claims**



1. A mirror comprising a generally sheet-like unbreakable body having opposite surfaces, one of said surfaces being a reflective surface, a first removable transparent protective sheet covering and protecting said reflective surface, means for securing a magnet to a second of said surfaces whereby said mirror can be removably attached to magnetically-attractive support surfaces, a strip of tape having pressure-sensitive adhesive coatings upon opposite sides thereof, a first of said adhesive coatings bonding said strip of tape to said magnet, a second removable protective sheet covering a second of said adhesive coatings whereby said mirror can not be adhesively secured to a nonmagnetically-attractive support surface until said second removable protective sheet has been removed, and the bond strength and adhesive affinity of said first adhesive coating is such as to generally cleanly separate along an interface between said magnet and said first adhesive coating when said strip of tape is separated from said magnet.

4,605,293

SPECTACLE FRAME WITH RESILIENT HINGES

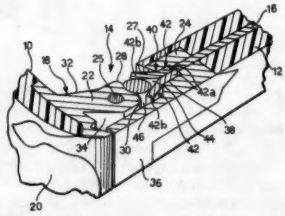
Oreste Blumenthal, Corso Montevecchio 36, Torino, Italy

Filed Feb. 23, 1984, Ser. No. 582,787

Claims priority, application Italy, Mar. 3, 1983, 67243 A/83

Int. Cl.[4] G02C *5/14, 5/22*

U.S. Cl. 351—153 **26 Claims**



1. Spectacle frame having two parts interconnected so as to be pivotable relative to each other between a mutually closed folded position and a mutually open position, a resilient hinge mechanism pivotally interconnecting the parts and including resilient biassing means associated with one of the frame parts, a cam member associated with the other of the frame parts, and

a rolling member cooperating with the cam member under the action of the resilient biassing means, the hinge mechanism defining a stable open position relative to which the two parts are able to effect limited and definable relative angular displacements against the action of the said resilient biassing means, wherein the resilient biassing means include a Y-configuration flexion spring device comprised of leaf spring means, said flexion device anchored to the respective part of the frame and defining a resiliently deformable seat for the lateral containment and centering of the rolling member.

4,605,294

COMPOSITE OPTICAL DISPLAY METHOD AND RELATED APPARATUS

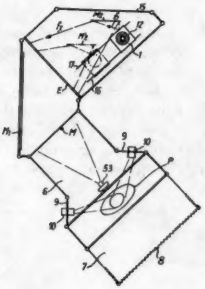
Jean-Claude Bourdier; Frederic G. Bourdier; Brigitte E. Bourdier, and Claude H. Bourdier, all of 17, Place des Vosges, 75004 Paris, France

Filed Aug. 31, 1984, Ser. No. 646,352

Claims priority, application France, Jan. 30, 1984, 84 01417

Int. Cl.[4] G03B *21/26, 21/22*

U.S. Cl. 353—28 **15 Claims**



1. A method for projecting onto a screen of a projection installation images of a series of adornments of the body each superimposed on the screen with the personal image of a person, to form on the screen, for viewing by the person, a series of composite images of the person dressed with each of said adornments, the method being performed with the aid of a series of slides of said adornments and a preliminary slide illustrating a sight image but not an adornment, the slide of each said adornment having defined therein a dimension mark which is treated as a reference value corresponding to a body measurement which is easily identified on the personal image of any person, one of the elements of the dimension mark of the slide of each said adornment being treated as a reference base constituted by one end of the dimension mark, such that the dimension mark has a constant value for the slides of all said adornments and the images of the reference base of the slides of all said adornments will be projected at the same physical place on the screen, said method comprising the steps of:

placing the person in the installation at a location such that the image of the part of his or her body which corresponds to said reference base will be projected onto the screen at said physical place;

projecting the image of the person onto the screen with the person so placed and projecting the image of said preliminary slide onto the screen to form a composite image representing the person and said sight image;

adjusting the position of said sight image on the screen until said sight image tallies on the screen with the particular size of the person, thus to set the size of the images of said adornments to be projected onto the screen; and thereafter

projecting the images of the series of slides of said adornments onto the screen, one after the other, while the person remains in said location;

the method being repeatable with a following person.

4,605,295

SINGLE LENS REFLEX CAMERA

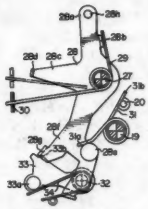
Yoshimi Ohno, Kawasaki; Ikuya Tsurukawa, and Tokio Ishino, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 457,382, Jan. 12, 1983, Pat. No. 4,498,754. This application Aug. 9, 1984, Ser. No. 621,727

Claims priority, application Japan, Jan. 25, 1982, 57-9675; Jan. 25, 1982, 57-9676; Feb. 12, 1982, 57-20940; Feb. 15, 1982, 57-22232; Feb. 15, 1982, 57-22233; Feb. 16, 1982, 57-27085[U]

Int. Cl.[4] G03B *17/02, 19/12*

U.S. Cl. 354—154 **5 Claims**



1. A single lens reflex camera having a shutter, a mirror, and a finder operatively associated with said mirror and comprising:

a quick return mechanism including a quick return setting member which is brought to a set position in response to a charging operation of the camera;

a combination spring means operatively associated with said quick return mechanism and which further comprises a mirror-biasing spring and a return spring offset from one another and which are stressed as the quick return setting member is brought to said set position;

a setting pawl operable for locking the quick return setting member in said set position and for unlocking the quick return setting member immediately before termination of operation of said shutter; and

a mirror-shutting member for causing upward movement of said mirror associated with said finder under a resilient force of the mirror-biasing spring in response to shutter release operation wherein the return spring and the quick return setting member are configured such that as the return spring is stressed, the resilient force of the return spring is directed closer to the direction of movement of said setting pawl.

4,605,296

MOUNTING ARRANGEMENT FOR A CAMERA VIEWFINDER

Derek Munnion, Andover, England, assignor to Link Electronics Limited, Great Britain

Filed Sep. 9, 1983, Ser. No. 530,988

Claims priority, application United Kingdom, Sep. 9, 1982, 8225699

Int. Cl.[4] G03B *13/02*

U.S. Cl. 354—223 **17 Claims**

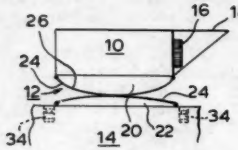
1. A mounting arrangement for adjustably attaching a viewfinder to a camera, comprising:

at least one rocker, said at least one rocker having a first end, a second end and a curved surface extending therebetween, said curved surface interposed said viewfinder and said camera for a rocking motion therebetween;

a second surface, positioned for rocking of said curved surface of said at least one rocker along said second surface, said second surface having a first end adjacent said

first end of said at least one rocker, and a second end adjacent said second end of said at least one rocker; and

means for attaching said at least one rocker to said second surface, said means for attaching comprising a first flexible



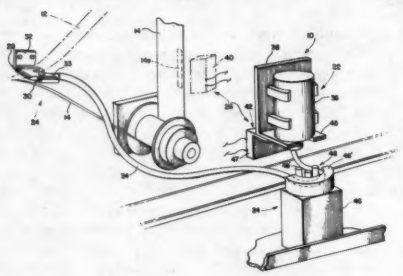
elongated member having a pair of ends, one of said pair of ends secured to said second end of said second surface and an other of said pair of ends secured to said first end of said at least one rocker.

4,605,297

METHOD OF AND APPARATUS FOR CONTROLLING THE APPLICATION OF PROCESSING FLUID

James J. Livingston, Waltham, and Duncan C. Sorli, Chelmsford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1984, Ser. No. 685,403
Int. Cl.[4] G03D *9/00*
U.S. Cl. 354—303 **9 Claims**



1. Apparatus for applying a coating of fluid initially retained in a container to an elongated section of a web of material,

a fluid dispensing nozzle;

means for progressively advancing the web of material along a predetermined path into operative relationship with said nozzle,

weight sensing means for receiving the container;

means for pumping the fluid from the container to said nozzle, said pumping means including a pump and a fluid line operatively associated with both said pump and said nozzle; and

means for enabling said pump to be rendered operable only when the weight sensing means senses a weight indicative that an amount of fluid retained in the container is sufficient to cover the entire elongated section of the web.

4,605,298

ELECTROGRAPHIC TRANSFER ROLLER DRIVE MECHANISM

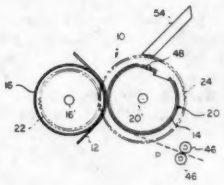
Matthew J. Russel, and Rose M. Borruso, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,017
Int. Cl.[4] G03G *15/14*
U.S. Cl. 355—3 TR **13 Claims**

1. In an electrographic reproduction apparatus wherein a transferable image is carried by a moving dielectric member and transferred from such dielectric member to a receiver member supported by a transfer roller when such transfer roller brings such receiver member into contact with such image in a transfer zone, mechanism for driving said transfer roller in relation with the moving dielectric member, said mechanism comprising:

means, located relative to the transfer roller, for supporting a dielectric member and moving said dielectric member through the transfer zone in transfer relation with a receiver member supported by said transfer roller;

means for selectively driving said transfer roller; and



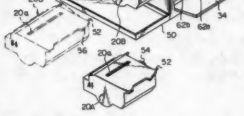
means for coupling said selective drive means to said transfer roller when a receiver member supported by said transfer roller is out of the transfer zone, and for decoupling said selective drive means from said transfer roller when such receiver member is in contact with said dielectric member in the transfer zone, whereby drive for said transfer roller is imparted thereto only through contact of such receiver member with said moving dielectric member and such receiver member and dielectric member move at the same peripheral surface speed.

4,605,299

IMAGE FORMING APPARATUS WITH SIZED PROCESSING KITS

Hideaki Mochimaru, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1985, Ser. No. 767,426
Claims priority, application Japan, Aug. 28, 1984, 59-179095
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **18 Claims**



1. An image forming apparatus for providing an image on a photoconductive element, comprising:

a body which constitutes a housing; and

a plurality of image forming kits selectively and removably loaded in said housing for each forming an image of a predetermined maximum size which differs from a predetermined maximum size or sizes assigned to the other kit or kits, each of said kits being provided in a cartridge configuration and including at least a photoconductive element therein.

4,605,300
DEVICE FOR EXPOSING AND SEPARATING PHOTOGRAPHIC STRIP-MATERIAL FOR THE PRODUCTION OF MARGINLESS COPIES

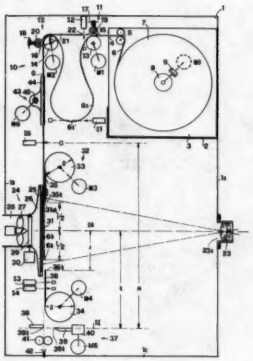
Kurt Thaddey, Buchs, Switzerland, assignor to Prontophot Holding AG, Dübendorf, Switzerland

Filed Oct. 11, 1984, Ser. No. 659,776

Claims priority, application Switzerland, Oct. 12, 1983, 5551/83

Int. Cl.⁴ G03B *29/00*

U.S. Cl. 355—29 **18 Claims**



1. A device for exposing photographic strip material in consecutive sections of predetermined format and for separating the exposed sections into marginless copies for further processing, said device having an exposure platform perpendicular to an optical copying axis of an optical copying device; a roller-blind shutter located immediately in front of said exposure platform with two curtains, each adapted to be moved along a path by means of a curtain roller and each comprising a closing edge running at right angles to said path and adapted to move across the exposure platform; a separating device which includes a cutting location at a fixed, predetermined distance from said optical axis; and a feed device for the strip material, said feed device containing a positioning roll operated by a drive motor, whereby said strip material is adapted to be fed along a track running along the path of the shutter curtains, across the exposure platform, and to said separating device, wherein the roller-blind shutter also serves as a picture-defining mask, to which end the rollers of the two shutter curtains are adapted to be operated by two drive motors through a curtain-positioning device which is arranged to move the shutter curtain more remote from the separating device into an exposure position in which its closing edge is half a frame length away from the optical copying axis, in the direction of said separating device, in order to mask the section of strip material at the edge of the picture more remote from said separating device, and in that the positioning roll of the feed device for the strip material is adapted to be operated by its drive motor through a strip material positioning device which is arranged to position the strip material, when the roller-blind shutter is closed and before a section of strip is exposed, in an exposure position in which the transverse edge of the strip material, leading in the direction of feeding, is spaced from the optical copying axis by half a frame length in the direction of the separating device and, after a section of strip material has been exposed, to advance said strip material, in order to position the exposed section in said separating device, by one feed length which is equal to the sum of the half frame length and said fixed distance between the cutting location of said separating device and the optical copying axis, and thereafter to actuate said separating device, and wherein the strip material positioning device is also arranged to move said strip material, for the purpose of exposing a first section of the strip, from a neutral position where said leading transverse edge of the strip material lies at said cutting location of the separating device, and for exposing each additional section after the separating operation, back out of the same neutral position, by a distance equal to the difference between the distance between the cutting location and the optical copying axis, and the half frame length, into the exposure position on the exposure platform.

4,605,301
EXPOSURE METHOD OF SEMICONDUCTOR WAFER BY MERCURY-VAPOR LAMP

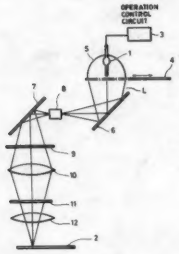
Takehiro Kira, Kobe, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,646

Claims priority, application Japan, Jul. 7, 1984, 59-139774; Jul. 7, 1984, 59-139775

Int. Cl.⁴ G03B *27/72*; G05F *1/00*

U.S. Cl. 355—69 **6 Claims**



1. In a method for exposing, through a pattern mask, small sections of a semiconductor wafer successively to light radiated from a mercury-vapor lamp in highlevel steps, during each of which the power consumption and discharge current of the mercury-vapor lamp are at a high level, by continuously lighting the mercury-vapor lamp and repeatedly alternating each of the high-level steps and a low-level step during which the power consumption and discharge current of the mercury-vapor lamp are at a low level, wherein the discharge current of the mercury-vapor lamp overshoots the discharge current of the high-level step when the mercury-vapor lamp is switched from the low-level step to the high-level step and undershoots the discharge current of the low-level step when the mercury-vapor lamp is switched from the high-level step to the low-level step, the improvement comprising effecting the alternation of the high-level step and low-level step while limiting the magnitude of each of the overshoot and undershoot to below 10% of the difference between the discharge current in the high-level step and the discharge current in the low-level step.

4,605,302
CLOUD HEIGHT MEASURING DEVICE WITH COMPENSATION FOR WINDOW FOULING

Folke Löfgren, and Sven-Erik Söderström, both of Västerås, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Filed Apr. 16, 1984, Ser. No. 600,768

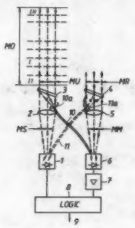
Claims priority, application Sweden, Apr. 18, 1983, 8302152

Int. Cl.⁴ G01C *3/08*

U.S. Cl. 356—5 **12 Claims**

1. A method for controlling the energy of measurement pulses emitted from a cloud height measuring device during cloud height measurement, in which the measurement pulses from a transmitter of the cloud height measuring device are passed through an output window of the device and after reflection at a given height above the said output window are

reflected back to a receiver in the device via a receiver window, characterized in that at least one of said windows is regularly monitored as regards surface fouling by means of measuring the level of energy reflected from the said window using the transmitter and receiver of the cloud height measuring device and in that the emitted energy of the measurement pulses used for cloud height measurement is controlled with the aid of this measurement whereby the attenuation of the measurement pulses transmitted throught the output window is compensated for by a corresponding increase of the measurement energy output from the transmitter.

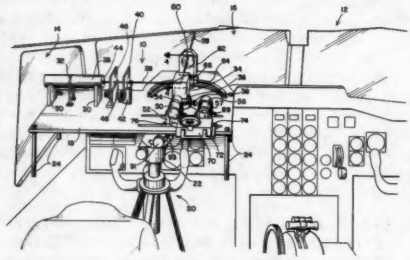


4,605,303

SIMULATOR SCENE DISPLAY EVALUATION DEVICE

Richard F. Haines, Los Altos, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 565,481
Int. Cl.[4] G01N *21/00*
U.S. Cl. 356—73 **7 Claims**



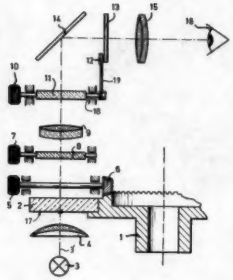
1. Apparatus for evaluating simulator scene display alignment and calibration, which comprises, a base, a source of collimated light mounted on said base, means mounted on said base for directing the collimated light at selected angles encompassed within a field of vision at a point proximate to said light source, a plurality of scene evaluation instruments mounted on said base and means mounted on said base for selectively positioning said plurality of scene evaluation instruments at the point by moving each of said plurality of scene evaluation instruments to and away from the point.

4,605,304

ANGLE-MEASURING INSTRUMENT WITH A COARSE-FINE DRIVE ARRANGEMENT

Helmut Leitz, Königsbronn, and Günter Rometsch, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 531,180
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242084
Int. Cl.[4] G01B *11/26;* G01C *1/06, 1/00;* F16H *35/18*
U.S. Cl. 356—138 **10 Claims**



1. An angle-measuring instrument such as a theodolite, tacheometer or the like, comprising: a housing; a graduated circle supported on a carrier mounted so as to be rotatable with respect to the housing; an index mounted in the housing; an optical transmission path for transmitting an optical image of a circle part of the graduated circle to the index whereat the same may be viewed by an observer; and, a coarse-fine drive arrangement for presetting a circle part of the graduated circle to a predetermined read-out value that includes a predetermined fine read-out value, the coarse-fine drive arrangement including:

light-shifting means movably mounted in the optical transmission path for shifting the light rays passing therealong;

movement transmission means for transmitting an actuating movement to said light-shifting means;

a gear mounted on said carrier of the graduated circle; and,

an adjustable drive including: gear means mounted thereon and adapted to be engageable with said carrier gear; and, actuator means forming part of said adjustable drive for actuating said movement transmission means;

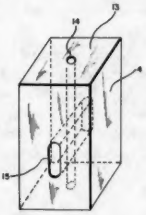
said adjustable drive being mounted in said housing so as to be movable to a first position whereat said gear means engages said carrier gear thereby permitting adjustment of the graduated circle to bring the circle part corresponding to the predetermined read-out value into the optical transmission path so as to cause the predetermined read-out value to appear as a coarse scale value at the index; and

said adjustable drive means also being mounted in said housing so as to be movable from said first position to a second position whereat said gear means is completely disengaged from said carrier gear and whereat said adjustable drive can be adjusted to cause said actuator means to transmit movement via said movement transmission means to said light-shifting means for finely shifting the light rays in the optical transmission path so as to cause said scale value to be aligned with said index whereby said predetermined read-out value can be read from said circle part and the angular position of said graduated circle remains unchanged.

4,605,305
LASER NEPHELOMETER FOR SENSING ANTIGENS AND ANTIBODIES CHARACTERIZED IN HAVING MEASURING CELL COMPRISED OF CAPILIARY TUBE WITH THE DIAMETER OF LASER BEAM

Jeannine Lenoir, Chaponost; André G. Bertoye, and Renée Bertoye, both of Lyons, all of France, assignors to Centre National de la Recherche Scientifique, Paris and Institut Pasteur De Lyon Et Du Sud-Est, Lyons, both of, France

Filed Jun. 30, 1983, Ser. No. 509,814
Claims priority, application France, Jul. 6, 1982, 82 12045
Int. Cl.[4] G01N *21/00, 21/03, 1/10, 15/00*
U.S. Cl. 356—246 **2 Claims**



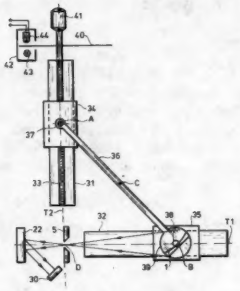
1. A laser nephelometer for detecting antigens and antibodies, comprising:
- a laser source for emitting a laser beam;
- a cell consisting of a capiliary tube containing a solution of said antigens and a solution of said antibodies to be detected, said laser beam being directed toward said cell and being scattered by said cell;
- a photoelectric sensor to collect the scattered light of said laser beam;
- processing means to process the information received by the sensor;
- wherein the inner diameter of the capiliary tube is approximately equal to the diameter of the laser beam, and wherein the laser beam is directed perpendicular to the capiliary tube and falls in the vicinity of an interface separation zone between the antigen solution and antibody solution to be detected.

4,605,306
GRATING MONOCHROMATOR

Károly Kaffka; Béla Nádai; András Czabaffy, and Loránd Horváth, all of Budapest, Hungary, assignors to Kozponti Elelmiszeripari Kutato Intezet, Budapest, Hungary

Filed Jun. 7, 1983, Ser. No. 501,902
Claims priority, application Hungary, Jun. 9, 1982, 1868/82
Int. Cl.[4] G01J *3/20*
U.S. Cl. 356—334 **12 Claims**

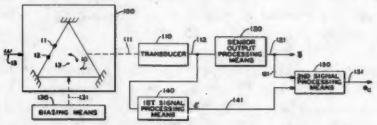
1. A grating monochromator comprising
- a concave reflection grating defining a Rowland-circle;
- an entance slit transmitting a radiation beam onto said grating;
- an exit slit transmitting the radiation beam reflected by said grating;
- a mechanism for moving said grating and at least one of said slits with respet to each other for setting different wavelengths of said reflected beam of radiation so that in the course of said moving both said entrance slit and said eit slit are always positioned along the Rowland-circle of said grating; and
- means for driving said moving mechanism by altering the distance between said at least one slit and a point on the Rowland-circle lying diametrically opposite to said grating; said driving means having a member moving proportionally to aid distance thereby providing a linear correspondence between said moving and said wavelength setting.



4,605,307
APPARATUS FOR LASER GYRO

Wah L. Lim, Anaheim, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1982, Ser. No. 390,417
Int. Cl.[4] G01C *19/64*
U.S. Cl. 356—350 **24 Claims**



1. An apparatus for determining incremental lock-in error in a sensor output of an angular rate sensor of the class wherein two waves propagate in opposite directions along a closed-loop path, wherein the frequency of each of said waves is a function of the rate of rotation of said closed-loop path, said waves establishing a phase difference therebetween, wherein said sensor provides an output signal, related to the frequency difference between said waves, indicative of the rotation of said closed-loop path, but which includes lock-in error, the apparatus comprising:
- signal means responsive to said waves for providing at least one output signal related to said phase difference between said waves;
- first signal processing means responsive to said at least one output signal for providing an output signal related to incremental lock-in error due to the lock-in phenomenon of said sensor, said first signal processing means having,
  - first approximating means for determining a first characteristic function descriptive of said phase difference for a first selected time interval in which first derivative values of said phase difference are continuously of a first polarity, said first approximating means further being capable of extrapolating from said first characteristic function a first value of said phase difference corresponding to a selected occurrence of a zero value of said first derivative having a corresponding second derivative value of said phase difference of a first polarity, and
- second approximating means for determining a second characteristic function descriptive of said phase difference for a second selected time interval in which first derivative values of said phase difference are continuously of a second polarity, said second approximating means further being capable of extrapolating from said second character-

istic function a second value of said phase difference corresponding to said selected occurrence; and

difference means for determining a difference value between said first and second values, said incremental lock-in error being directly related to said difference value.

4,605,308

CONTACTLESS RELATIVE MOVEMENT SENSOR

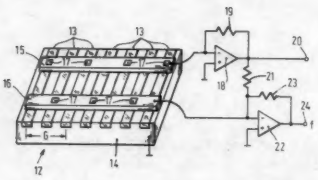
Rainer Hankel; Minh-Chanh Pham, and Sieghart Peuser, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 4, 1983, Ser. No. 520,136

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229343

Int. Cl.⁴ G01B *11/14*

U.S. Cl. 356—373 **19 Claims**



1. Contactless relative movement sensor system to determine relative movement between a sensor (**11, 12, 13**) and a reference surface (**10**), in which the sensor includes a grid structure (**12, 30, 40**) located in a grid plane, and optical means (**11**) imaging the surface (**10**) on the grid plane,

wherein, in accordance with the invention,

said grid structure comprises an electro-optical transducer means (**13, 41, 50**) arranged in a grid structure pattern, connected in the form of four inter-digited comb-like grid structures, and positioned in said grid plane; and

electrical means (**18,24; 35–37**) coupled to said transducer means and providing electrical output signals directly from said optical transducer means in said grid structure pattern, said electrical means comprising

a first subtraction circuit (**35**) subtracting the outputs of a first and a third grid from each other;

a second subtraction circuit (**36**) subtracting the outputs of a second and a fourth grid from each other; and

a phase comparator (**37**) comparing the phases of the outputs of the first and second subtraction circuits to obtain an output signal representative of the direction of motion of the sensor with respect to the reference surface.

4,605,309

MIXING AND SHEARING ROLLER-MILL

August Albers, Heitersheim, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

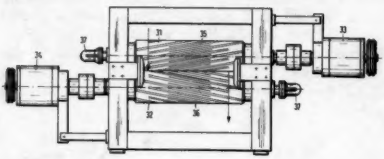
Filed Jan. 9, 1985, Ser. No. 690,052

Claims priority, application European Pat. Off., Jan. 16, 1984, 84100370.0

Int. Cl.⁴ B29B *1/06*

U.S. Cl. 366—76 **10 Claims**

1. A mixing and shearing roller-mill for plasticisable material comprising first and second rotatable, tempered rolls, each said roll defining a longitudinal axis, said rotation being effected about said longitudinal axis, drive means for each said roll for rotating said rolls at different speeds relative to one another, each said roll having an axial length and a diameter, said axial length being at least four times greater than said diameter, each said roll including an external surface, said external surface defining grooved portions, the transition regions between said surface and each said groove being sharp-edged, each said groove being inclinedly disposed at an acute angle relative to said roll axis, said grooves on said first roll having an opposite hand to said grooves on said second roll, each said roll defining first and second axial end regions and a central region intermediate said end regions, said material feed means disposed in said first end region and material discharge means disposed in said



second end region, the number and depth of said grooves increasing from said first end region to said central region and decreasing from said central region to said second end region, said rolls jointly defining a roll nip therebetween and adjustable feed and discharge means for feeding and discharging different types of material and additives axially disposed along said roll nip.

4,605,310

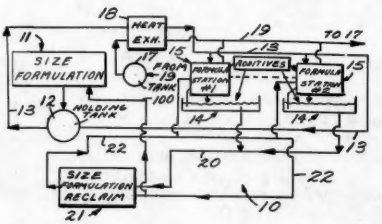
AUTOMATED SIZING SYSTEM CONTROLLING USING A RADIO TRANSMITTER LEVEL CONTROL

Frederick D. Pritchard, Clarksville, and John E. Pittard, Halifax, both of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 491,274, May 4, 1983, Pat. No. 4,514,092. This application Feb. 8, 1985, Ser. No. 699,473

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—142 **4 Claims**



1. A method of providing size formulation to one or more of a plurality of size boxes associated with a plurality of slashers, comprising the steps of:

(a) mixing and heating a number of size formulation components to produce a size formulation having a predetermined composition and temperature;

(b) circulating the size formulation in a closed loop past each of the size boxes;

(c) sensing the size level in each size box utilizing a radio transmitter level control in each size box, which utilizes radio waves to sense the level; and

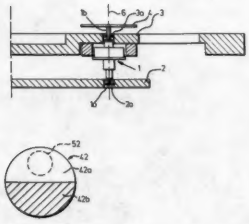
(d) responsive to said sensing in step (c), withdrawing size formulation from said closed loop and supplying it to each size box having size therein below a predetermined level.

4,605,311

ELECTRONIC WATCH HAVING A STEPPING MOTOR

Jürgen Loitz, Rheinfelden, Switzerland, assignor to Aline Loitz-Triebold, Rheinfelden, Switzerland

Filed Apr. 24, 1985, Ser. No. 727,252
Claims priority, application Switzerland, Oct. 2, 1984, 4725/84
Int. Cl.[4] G04B *19/20, 19/06*
U.S. Cl. 368—77 **10 Claims**



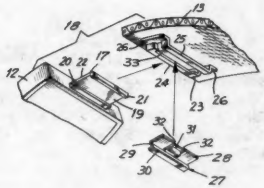
1. An electronic watch, comprising:
a watch face having at least one window therein;
a stepping motor with a rotor which rotates suddenly by about 180° after the elapse of every second, said rotor having a shaft that is oriented toward said face; and
an ornamental disc mounted on said shaft and disposed directly below said face, said ornamental disk having a plurality of visually distinguishable regions that are disposed so that regions exposed by said at least one window change suddenly every second.

4,605,312

WATCHBAND/WATCHCASE CONNECTION

Quentin Sellier, North Bergen, N.J., assignor to Duchess Industries, Inc., Hoboken, N.J.

Filed Feb. 8, 1985, Ser. No. 699,998
Int. Cl.[4] G04B *37/00;* **A44C** *5/18*
U.S. Cl. 368—282 **7 Claims**



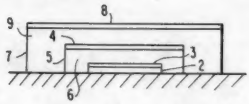
1. A watchband/watchcase connection comprising:
a bridge component permanently connected to the watchband at one end portion of the latter and having two bridge portions extending transversely of the watchband at a first spacing from the latter to bound therewith a receiving space and at a second spacing longitudinally of the watchband from one another;
a lug component rigid with the watchcase and at least partially received with minimum clearance in said receiving space in an assembled condition upon introduction from the free end of the one end portion of the watchband, said lug component having a channel extending transversely of the watchband and facing toward said second spacing in said assembled condition; and
a connecting component having at least a limited resiliency to brace itself with a predetermined force against said bridge portions, and including a first substantially flat portion substantially snugly received in said channel of said lug component, and two second portions having respective abutment surfaces facing in opposite longitudinal directions of the watchband away from one another and each engaging one of said bridge portions of said bridge components with interference fit in said assembled condition, one of said second portions of said connecting component extending along a course substantially normal to said first portion, and the other of said second portions being a protuberance rising out of said first portion, said one of said second portions of said connecting component deviating from said substantially normal course to form a nose which, in said assembled condition, extends within said channel of said lug component to underneath the associated one of said bridge portions to engage the same from below.

4,605,313

INFRARED DETECTOR FOR NDIR GAS ANALYSIS

Paul L. Kebabian, Acton, Mass., assignor to Environmental Research & Technology, Inc., Concord, Mass.

Filed Apr. 10, 1985, Ser. No. 721,601
Int. Cl.[4] G01J *5/00*
U.S. Cl. 374—121 **15 Claims**



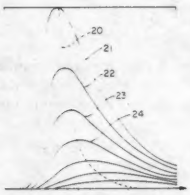
1. A detector for receiving radiation and providing a first signal in accordance with the amount of said radiation absorbed by a reference gas and a second signal in accordance with the amount of said radiation not substantially absorbed by said reference gas, said detector comprising:
a first enclosure containing said reference gas, and being at least partially transparent to said radiation;
absorption means for absorbing radiation which passes through said reference gas without absorption by said reference gas; and
a thermal detector, in thermal contact with said absorption means and said reference gas, for providing an output signal responsive to the temperature of said thermal detector, said output signal being alternatively indicative of said first or said second signal.

4,605,314

SPECTRAL DISCRIMINATION PYROMETER

Lars Stenmark, Klevbergsvägen 53, S-17900 Stenhamra, Sweden

Filed Jan. 11, 1984, Ser. No. 569,883
Claims priority, application Sweden, Jan. 13, 1983, 8300139
Int. Cl.[4] G01J *5/24, 5/26*
U.S. Cl. 374—127 **5 Claims**



1. A device for determining the temperature of a body by detecting the electromagnetic radiation emitted by said body, said device comprising:
a transmission means for transmitting the radiation from said body,

a wavelength separating means for receiving said radiation from said transmission means and spectrally separating said radiation according to wave length in a distribution of intensities having a center of gravity at a particular wave length,

a detector unit including a detector said detector receiving said spectrally separated radiation,

a signal processing unit for receiving an output signal from said detector and converting said signal into a temperature information,

an output means connected to the output of said signal processing unit for receiving and displaying said temperature information,

wherein said detector comprises a single linear position sensing detector cell having outputs with sensitivity suitable for receiving and processing said spectrally separated radiation transmitted by said transmission means as a function of distribution about said center gravity, and responsive within the intended range of temperature measurement, and wherein said transmission means, said detector and said separating means are fixed in position with respect to each other.

4,605,315

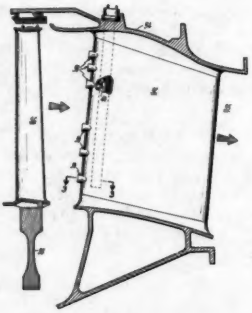
TEMPERATURE PROBE FOR ROTATING MACHINERY

Joseph M. Kokoszka, Enfield, and Rocco M. Tommasini, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1984, Ser. No. 681,395

Int. Cl.⁴ G01K *1/14, 13/02*

U.S. Cl. 374—144 **3 Claims**



1. A temperature probe for measuring the temperature of a gaseous stream in rotating machinery whose direction varies, a strut having a leading edge disposed in said gaseous stream, a temperature measuring element mounted in a cavity in said strut and first and second passageways in said strut leading a portion of said gaseous stream from said leading edge to said temperature measuring element and to a discharge port located at the side of said strut where the static pressure is at a value lower than the value of the pressure adjacent said leading edge, means for obtaining a free stream velocity of said gaseous stream in said passageways, said means including a tube projecting from said leading edge communicating with said first passageway, the end of said tube being scarfed and angled relative to the strut in the direction of said gaseous stream.

4,605,316

FLEXIBLY DAMPED SHAFT BEARING ARRANGEMENT, PARTICULARLY FOR USE IN ELECTRICAL MACHINERY

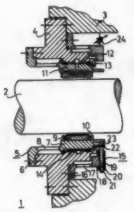
Manfred Utecht, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,913

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328362

Int. Cl.⁴ F16C *27/02, 27/06*

U.S. Cl. 384—99 **15 Claims**



1. In a flexibly damped shaft-bearing arrangement, in electrical machines, with a bearing housing that surrounds the shaft in a ring and a movable bearing support, which contains the shaft bearing and is suspended radially by first stage springs in the bearing housing, with a recess in the bearing housing, provided with lateral seals, being left between the bearing housing and the bearing support in order to accommodate a fluid pressure cushion, the improvement comprising a second stage elastic suspension provided between the bearing housing and the bearing support, which, when the machine provided with such bearings is not operating, has a clearance with respect to the bearing support which is smaller than the potential spring excursion of the bearing support said second stage elastic suspension having means for providing support between the bearing housing and the bearing support when the clearance between the first stage springs and second stage springs is taken up for changing the elasticity of the bearing assembly.

4,605,317

HYDROSTATIC ROLLER BEARING

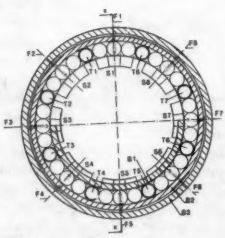
Francesco Bonaccorso, Via G. La Farina, 163, 98100 Messina, Italy

Filed Nov. 16, 1983, Ser. No. 552,269

Claims priority, application European Pat. Off., Nov. 24, 1982, 82830287.7

Int. Cl.⁴ F16C *21/00, 33/66*

U.S. Cl. 384—101 **8 Claims**



1. A bearing for supporting a load on a shaft by means of a pressurized fluid and/or by means of a plurality of rollers in the absence of said pressurized fluid;

said bearing comprising:

an inner bearing race;
an outer bearing race;
a plurality of pressure reduction ducts formed in said outer bearing race for feeding said pressurized fluid therethrough; and wherein said plurality of rollers disposed between said inner bearing race and said outer bearing race are divided into a plurality of groups of at least one roller, each group of said plurality of groups defining a chamber including a plurality of cavities formed between said plurality of rollers and said inner and outer bearing races, each said chamber communicating with and fed by one of said plurality of pressure reduction ducts, such that a loading of said shaft resulting in an eccentric disposition of said shaft within said bearing generates a fluid pressure differential between each said chamber corresponding to a different reaction force opposed to said loading generated within each said chamber.

4,605,318

ELASTIC SEAL FOR USE IN ANTIFRICTION BEARINGS

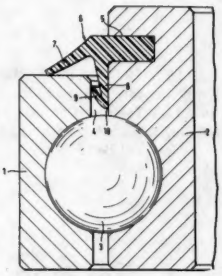
Theodor Kaiser, Höchstadt, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Sep. 11, 1985, Ser. No. 774,911

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435437

Int. Cl.[4] F16C *33/78*

U.S. Cl. 384—482 **5 Claims**



1. An antifriction bearing comprising two coaxial races, said races defining an annular gap and one of said races having a portion extending axially beyond the other of said races, said other race having an end face at the other side of said gap; and an elastic annular seal including a supporting portion affixed to said portion of said one race, a sleeve integral with said supporting portion, extending into the interior of said gap and contacting said one race, a first lip which is integral with said supporting portion, which is located outside of said gap, and which sealingly and slidably engages the end face of said other race, and at least one additional lip integral with said sleeve, located in said gap and sealingly and slidably engaging said other race.

4,605,319

SEALING RING FOR A ROLLING BEARING

Abraham Korenhof, Damhertlaan, Netherlands, assignor to SKF Industrial Trading and Development Company B.V., Nieuwegein, Netherlands

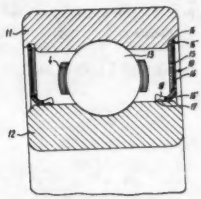
Filed May 29, 1984, Ser. No. 614,803

Claims priority, application Netherlands, Jun. 9, 1983, 8302055

Int. Cl.[4] F16C *33/78*

U.S. Cl. 384—484 **14 Claims**

1. In a rolling bearing comprising inner and outer races and at least one row of rolling members between said races, said inner race having an outer cylindrical surface, said surface being grooved for contacting said rolling members, and sealing rings closing off the space between the races externally, each sealing ring including an annular element of a rigid material, the outer edge of which is accommodated in an annular groove in the outer race of the rolling bearing and a sealing element, attached thereto, of an elastic material comprising a lip-shaped part which, with respect to the annular element, projects inward and rests against the inner race of the rolling bearing, the improvement wherein the annular element is a flat ring which closes off the space between the races, except for a relatively



narrow slot between its inner peripheral edge and the inner race, and the sealing element of an elastic material likewise has essentially the shape of a flat ring, the outer peripheral part of which and the element of a rigid material are joined, the inner peripheral part projecting beyond the inner periphery of said rigid element, which projecting part is directed inward, and the outer surface of which abuts against said outer cylindrical surface of said inner race, and including a plurality of spaced apart notches, the length and/or the thickness of said abutting part being greater than the breadth of the said slot.

4,605,320

DEVICE FOR SUPPORTING SPINDLES

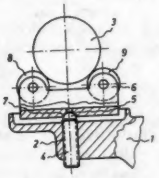
Matthias Gössner, Malente, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Oct. 28, 1985, Ser. No. 792,036

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1984, 3440039

Int. Cl.[4] F16C *13/06*

U.S. Cl. 384—494 **7 Claims**



1. A device for supporting long threaded spindles to prevent sag of the spindles due to their dead weight at a free-bearing portion thereof, comprising:
at least one carrier member connected to a base of a machine with which the spindle is associated, the carrier member having a height-adjustable spherical head positioned below a rotational axis of the spindle;
a substantially U-shaped roller bearing block and means for situating the roller bearing block on the spherical head so as to permit rotation of the roller bearing block about three mutually perpendicular axes;
first and second supporting rollers seated in the roller bearing block such that their respective rotational axes lie parallel to said spindle rotational axis;
the first roller having means for seating it in play-free fashion, and the second roller having means for seating it so as

to permit a limited tilting motion about a center thereof; and

means for limiting the tilting motion of the second roller.

4,605,321

ROLLER BEARING FOR SEATING A PEDAL BEARING SHAFT

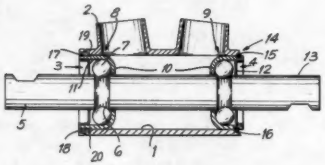
Manfred Brandenstein, Eussenheim; Roland Haas, Hofheim, and Rüdiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfbriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 584,090

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 8308615[U]

Int. Cl.[4] F16C *23/06*

U.S. Cl. 384—512 **10 Claims**



1. In a rolling bearing unit including a housing element with a bore therethrough, a pedal bearing shaft extending through said bore, and a pair of axially spaced bearings formed by a pair of axially spaced annular grooves in the outer surface of said shaft, a plurality of bearing elements positioned in said grooves and first and second outer race elements mounted in said housing bore, the improvement wherein each of said outer race elements is made of sheet metal, is generally cup-shaped to define generally cylindrical walls, and has a flange at one end extending radially inward, and said rolling bearing unit further comprises first means mounted to inhibit axial movement of said first outer race element in said bore in one axial direction at an axial position along said bore, whereby said first and second outer race elements may pass freely through said bore in said one axial direction until said first outer race element is at said axial position, and second means for adjusting the axial position of said second outer race element with respect to said bore to enable adjustment of the axial play of said bearing with respect to said shaft, wherein said second means comprises a ring with external threads, rotation of said ring driving said ring and said second outer race element axially relative to said housing.

4,605,322

DOUBLE ROW ROLLER BEARING RETAINER

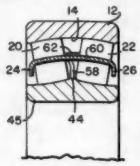
Richard L. Alling; Richard W. Shepard, both of Torrington, Conn.; Clyde L. Landrum, Granger, Ind.; Robert H. Tofield, Torrington, and Stephen T. Podhajecki, Norfolk, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 556,559, Nov. 30, 1983, abandoned. This application Jul. 12, 1985, Ser. No. 754,680

Int. Cl.[4] F16C *33/46*

U.S. Cl. 384—575 **2 Claims**

2. A double row spherical roller bearing comprising: inner and outer races with opposed curved raceways, the inner race having two curved raceways separated by an annular protrusion and extending angularly from the annular protrusion toward the bearing axis, a rigid unitary retainer made from flat metal stock and having a pair of axially separated end rings at least a portion of the radially inner surface of each end ring being radially spaced from the inner race and circumferentially separated axially extending generally U-shaped crossbars interconnecting the end rings with the legs of each generally U-shaped crossbar extending radially outwardly from the end rings and an axially centered metal band bonded to the crossbars, said metal band having a plurality of circumferentially separated radially inwardly extending projections extending



from the metal band, each projection being adapted to extend between the rollers in axially aligned pockets and contact said annular protrusion on the inner race.

4,605,323

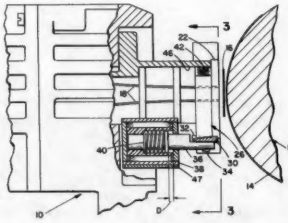
DUAL QUALITY WIRE MATRIX PRINT HEAD

Robert C. Blanchard, Glendale, Ariz., and David G. Geis, Niles, Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

Filed Jul. 2, 1985, Ser. No. 751,358

Int. Cl.[4] B41J *3/02*

U.S. Cl. 400—124 **8 Claims**



1. A print head for a wire matrix printer, said print head being laterally movable in the direction of printing, comprising:

a pair of wire guides positioned in adjacent, parallel, vertical relationship;

each of said guides having a plurality of print wires extending therefrom in vertical alignment with each other within the respective guide;

means for effecting the simultaneous selected vertical movement of said guides, including:

a horizontally moveable platform positioned beneath corresponding ends of said guides in contacting relationship therewith;

said platform presenting a pair of inclined surfaces on the top thereof sloping in opposite directions; and

means operatively connected to said platform for moving said platform in a horizontal direction to thereby effect simultaneous selected vertical movement of said guides.

4,605,324

ELECTRONIC TYPEWRITER WITH A DEVICE FOR ZERO POSITIONING OF A ROTARY CHARACTER-CARRYING DEVICE

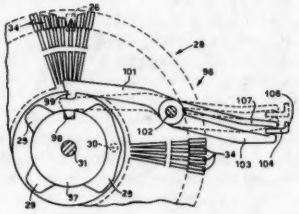
Pietro Musso, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 582,611, Feb. 22, 1984, abandoned. This application Nov. 8, 1985, Ser. No. 795,759

Claims priority, application Italy, Feb. 22, 1983, 67196 A/83

Int. Cl.[4] B41J *1/30*

U.S. Cl. 400—144.2 **22 Claims**



1. An electronic typewriter comprising a platen which defines a typing point, a carriage which is movable parallel to the platen and supporting a character-bearing disc having a series of flexible laminae each carrying a character, a driving means consisting of a selector motor with windings for selectively rotating the character-bearing disc, a correcting ribbon, means comprising a control member and a ribbon supporting frame for lifting the correcting ribbon up to a position in front of said typing point, memory means for storing the angular position of the character-bearing disc with respect to the typing point, means for performing a correction cycle including, in the following order, the selection of a desired character of the character-bearing disc in front of the typing point, the actuation of said control member and the striking of the desired character against the platen through said correction ribbon, and zeroing means for positioning the character-bearing disc in a zero position at any point of the carriage movement along the platen,

said zeroing means comprising;

means for performing an initialization cycle for said selecting motor and said control member;

a stop member including a single stop surface rotatable together with the given path, wherein said single stop surface is univocally associated with said zero position of the character-bearing disc;

means for arresting the character-bearing disc in its zero position consisting of.

a toothed member operatively connected with the ribbon lifting frame and having a tooth cooperative with the single stop surface of said stop member

first means controlled by said means for performing an initialization cycle for actuating said control member to lift the ribbon lifting frame in the correcting position and for causing the toothed member with its tooth to be moved toward the path of the single stop surface of the stop member during the initialization cycle;

second means also controlled by said means performing an initialization cycle for driving the selecting motor with a reduced current and a reduced speed to rotate the character-bearing disc jointly with actuation of said control member until the tooth engages the single stop surface and causes the character-bearing disc to be stopped at its zero position; and wherein the reduced current on said windings and the reduced speed of said motor are selected to avoid damage to the moving parts, arrested by the action of said tooth on said stop surface;

loading means for loading the memory means with the zero position, said loading means including timing means for revealing a given time sufficient to the arrest of the character-bearing disc by the action said tooth on said stop surface; and

execution register means for loading the memory means with said zero position after the elapsing of said given time, and wherein said means for performing a correction cycle comprises means for selecting the desired character in front of the typing point when said tooth is disengaged from said stop surface and actuate said control member only when the selection of the desired character has been completed before the lifting of said ribbon lifting frame during each correction cycle wherein any engagement of said single stop surface with said tooth is avoided during said correction cycle.

4,605,325

RIBBON CASSETTE WITH RELEASABLE LOCKING MECHANISM

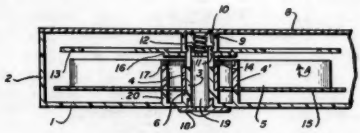
Norbert Hofmann, Nuremberg, Fed. Rep. of Germany, assignor to Triumph Adler AG, Nuremberg, Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,175

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421407

Int. Cl.[4] B41J *35/28*

U.S. Cl. 400—207 **4 Claims**



1. A ribbon cassette for use in typewriters or like machines, said cassette having a bottom wall and a cover and containing a single flange ribbon supply spool supporting a ribbon coil,

a hollow axle extending from the bottom wall toward said cover for rotatably supporting said ribbon supply spool and for accomodating a pin extending upwardly from a cassette supporting machine part,

a locking plate having a dimension at least equal to the diameter of a full ribbon coil non-rotatably mounted on said moveable relative to said axle in planes parallel to the plane of said ribbon coil,

means on said axle and said cover for locking said cover to said axle,

and a coiled spring positioned between said cover and said locking plate with its coil axis aligned with the axis of said axle for normally biasing said locking plate against the plane of said ribbon coil to prevent treeing of said ribbon coil, said plate being movable away from said ribbon coil against the bias of said spring by said pin when said cassette is mounted on said machine part, said nonrotatable mounting of said locking plate and said axle comprising a central cross-shaped portion on said locking plate, and an axially slitted upper end on said axle to accommodate its extension through said openings on said cross-shaped portion whereby relative rotational movement is precluded while axial movement of said locking plate relative to said axle is permitted.

4,605,326

DOT MATRIX COLOR PRINTER

Seth L. Everett, Jr., Lincroft, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 22, 1985, Ser. No. 714,784

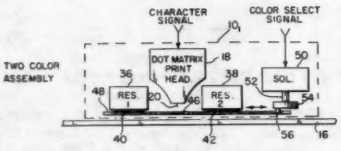
Int. Cl.[4] B41J *27/12, 27/14*

U.S. Cl. 400—201 **22 Claims**

1. An impact printer which operates to print in a plurality of colors, on a medium, comprising:

impact print means; means for providing relative movement between said print means and said medium,

at least one flat elongated ink trnasfer material holding member located intermediate said print means and said medium; at least two elongated mutually separated sections of ink transfer material of selective colors collinearly arranged along the lengthwise dimension of said holding member and being operable to transfer ink in the form of printed indicia, to said medium upon actuation of said print means;



means in contact with each said section of ink transfer material for continuously replenishing a supply of ink of a selected color to the respective section of ink transfer material; and

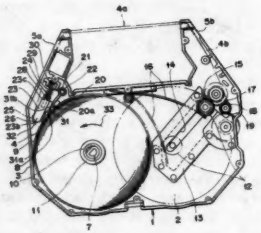
translating means for translating said ink transfer material holding member linearly back and forth across the front of said print means; said translating means including a cam; and means for rotating said cam to at least two positions, said cam engaging said transfer material holding member causing linear translation of said member.

4,605,327

PRINT RIBBON CASSETTE INCLUDING RIBBON TENSIONING MEANS

Junzo Ueki, and Yoshiaki Nakajima, both of Kodaira, Japan, assignors to Silver Seiko Ltd., Japan

Filed Jul. 23, 1985, Ser. No. 758,055
Claims priority, application Japan, Jul. 31, 1984, 59-158584
Int. Cl.⁴ B41J *32/00*
U.S. Cl. 400—208 **8 Claims**



1. A print ribbon cassette removably mountable on a printing office machine, comprising:

a cassette body including a bottom member;

a feed spool mounted for rotation in said cassette body and having a ribbon wound thereon;

a take-up spool mounted for rotation in said cassette body for winding the ribbon thereon;

ribbon guide means provided on said cassette body for guiding the ribbon to be fed from said feed spool to said take-up spool; and

ribbon locking means for permitting rotation of said feed spool to feed the ribbon therefrom during use of the ribbon and for preventing inadvertent rotation of said feed spool during disuse of the ribbon;

said ribbon locking means including a flange mounted for coaxial and integrally rotatable relationship with said feed spool and having peripheral serrations formed thereon; a lock member mounted for pivotal motion on said cassette body and having a tip end for engagement with said peripheral serrations of said flange, a ribbon lock control member movable in response to a tensile force of the ribbon fed out from said feed spool between an operative position in which said ribbon lock control member engages with a portion adjacent said tip end of said lock member to press said lock member into engagement with said flange and an inoperative position in which said ribbon lock control member disengages from said lock member to allow said lock member to be disengaged from said flange, and a spring member for urging said ribbon lock control member to said operative position;

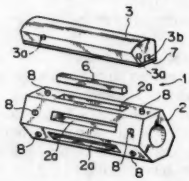
said bottom member having a support rib provided thereon and said ribbon lock control member having a groove formed on a bottom face thereof and fitted with said support rib to allow said ribbon lock control member to move back and forth along said support rib, said ribbon lock control member having a ribbon guide face formed at a forward end thereof, said ribbon lock control member having at the opposite rearward end thereof a receiving portion for receiving said spring member thereon.

4,605,328

POLYCHROME PRINTING PLATEN OF A PRINTER

Eiichi Shomura, and Taiji Goto, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed May 21, 1984, Ser. No. 612,442
Claims priority, application Japan, Jun. 1, 1983, 58-81849[U]
Int. Cl.⁴ B41J *11/04, 11/057*
U.S. Cl. 400—662 **4 Claims**



1. A polychrome printing platen of a printer having a platen shaft, comprising an axially elongated platen core of polygonal cross-section to form a plurality of planar support faces extending in the direction of elongation of said core, said core being rotatably mounted on said platen shaft and having a plurality of grooves each formed in a respective support face and extended in the direction of elongation of said core, said grooves being spaced from each other in a circumferential direction of said core; a plurality of permanent magnets each mounted in one of said grooves and each having an upper face coplanar with a respective support face; a plurality of axially elongated elements having inks of different colors impregnated therein, each of said ink impregnated elements having an upper face and a lower face and having a magnetisable plate secured to the lower face thereof, said ink impregnated elements being detachably attached to and retained on said platen core by said permanent magnets which attract said magnetisable plates, and by means preventing each of said ink impregnated elements from being displaced along said support face, whereby said elements are individually and optionally interchangeable on said core.

4,605,329

HYDRAULIC TRANSPORTATION OF OBJECTS

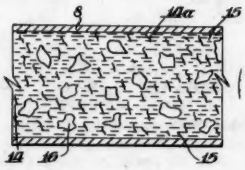
Geoffrey G. Duffy, Takapuna, New Zealand, assignor to Fibre Dynamics Limited, Takapuna, New Zealand

Filed Oct. 25, 1983, Ser. No. 545,347

Claims priority, application New Zealand, Oct. 29, 1982, 202329

Int. Cl.[4] B65G *53/30*

U.S. Cl. 406—49 4 Claims



1. The method of transporting coal, characerized by supplying the coal in pieces about 60 millimeters in size, introducing those pieces into a pipeline along with a stream of water in which is distributed a sufficient concentration of suspended flocculated flexible fibers to support each of the pieces of the coal, and passing the stream of water carrying the thus-supported pieces of coal, through the pipeline.

4,605,330

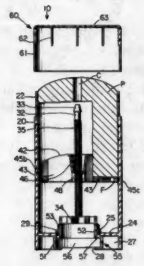
DISPENSING CONTAINER FOR STICK-SOLIDS

Michael J. Crowley, Maineville; Arthur H. Dornbusch, and Paul J. Green, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 27, 1984, Ser. No. 644,429

Int. Cl.[4] B43K *21/08, 5/06*

U.S. Cl. 401—68 15 Claims



10. A dispensing container for solid stick-type products comprising:

(a) a tubular container body of substantially oval cross-section having an open upper end and a base member substantially closing the lower end of said container body, said base member having a central aperture formed therethrough;

(b) a cup-shaped closure cap telescoped over said upper end;

(c) an internally threaded follower slidably and non-rotatably disposed within said container body for axial movement therewithin, said follower being substantially fully retractable within said container body and including a central core having a plurality of radially disposed fin-like elements extending outwardly therefrom providing a partially open skeletal structure about the periphery of said central core adapted to permit axial flow of molten solid stick product therethrough during filling operations and later imbedment in and adherence to the solidified stick product; and

(d) means for manually varying the axial position of said follower within said container body; said varying means further comprising an externally threaded screw stem having cooperative engagement with said internal threads of said follower, and a rotating means disposed on the lower exterior of said base member and extending into said container body through said central aperture; said rotating means having a bore formed therein providing fluid communication from the exterior to the interior of said container body therethrough; and said screw stem being attached to said rotating means adjacent said bore by skeletal-structured mounting means further comprising at least one radially disposed spoke-like support arm which does not substantially block said bore and thereby permits axial flow of said molten solid stick product through said central bore and said mounting means during filling operations.

4,605,331

PRESSURIZED WRITING DEVICE WITH NEEDLE WEIGHT HAVING VALVE MEANS

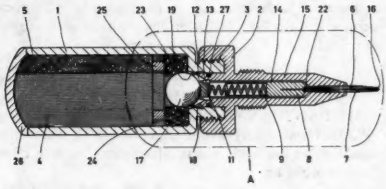
Kurt Held, Alte Strasse 1, 7218 Trossingen 2, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,322

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347708

Int. Cl.[4] B43K *8/00, 5/18*

U.S. Cl. 401—258 10 Claims



1. A writing device comprising:

a storage tank for Indian ink or another writing medium;

a propellant in the storage tank in the form of a liquid gas that is subject to its own vapor pressure and that acts directly on the writing medium contained in said tank;

a housing connected to the storage tank and open in the direction of said tank;

a tubular pen arranged on the housing, where the end of said pen situated in the interior of said housing is designed as a valve seat;

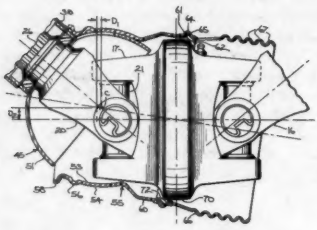
a drop weight member, displaceable in the interior of the housing, having at one end a valve body situated opposite the valve seat formed at the end of the tubular pen, so that said valve body can be sealingly positioned onto said valve seat; and

a needle, attached to the drop weight member, that is axially displaceable in the tubular pen and arranged so that it may act on said drop weight member to move the valve body from its closed, sealed position of the valve seat to an open position allowing the writing medium to flow through said pen.

4,605,332
UNIVERSAL JOINT GUARD

Roger D. Mayhew, Fredonia, and B. Bennett Reak, West Bend, both of Wis., assignors to Weasler Engineering, Inc., West Bend, Wis.

Filed Apr. 12, 1985, Ser. No. 722,340
Int. Cl.[4] F16B *11/00*; F16C *1/26*
U.S. Cl. 403—23 2 Claims



1. In a double universal joint having first and second yokes pivotally connected by corresponding cross-links to a double inner housing, a guard comprising:

a single bell element having a hemispherically shaped outer surface;

bearing means for mounting the bell element on the first yoke with the bell element opening toward the housing and being axially fixed and rotatable on the first yoke;

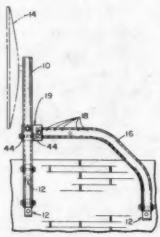
a boot for surrounding the housing, the boot having (a) a first end portion with a hemispherically shaped inner surface to mate in sliding contact with the hemispherically shaped outer surface of the bell element so that the bell element is captured inside the boot, (b) a central portion having a bearing surface therein, and (c) a second end portion from said central portion opposite from said first end portion, said second end portion being open; and

wherein the housing has a spherical outer surface in sliding contact with the bearing surface to allow the bearing surface and the boot to tilt on the housing as the first yoke is articulated relative to the housing.

4,605,333
DISH ANTENNAE MOUNTING STRUCTURE

Lyle W. Hovland, Murrysville, and James D. Klingensmith, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 473,018, Mar. 7, 1983, Pat. No. 4,510,502.
This application Dec. 17, 1984, Ser. No. 682,426
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—27 1 Claim



1. A bolted joint connection for joining at least two members comprising:

a deformable portion of the first member having a bore extending therethrough;

a portion of the second member having an aperture extending therethrough;

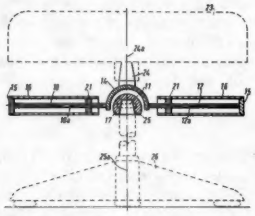
a threaded bolt having a shank portion for extending through said bore and aperture; and

a nut for threading on said bolt to draw said first and second members tightly together, said nut, bolt, deformable portion and second member portion cooperating upon tightening to indicate to one tightening the nut and bolt when said nut and bolt are tightened to a predetermined extent, said predetermined extent of tightness being characterized by said deformable portion having undergone a predetermined amount of deformation.

4,605,334
LINKAGE MECHANISM FOR COUPLING TWO MOVABLE MEMBERS

Ivar Kalvatn, Volda, Norway, assignor to Ari Associates, Inc., San Rafael, Calif.

Filed Nov. 17, 1983, Ser. No. 552,666
Claims priority, application Norway, Nov. 17, 1982, 823841
Int. Cl.[4] F16M *13/00*; F16D *1/00*
U.S. Cl. 403—291 10 Claims



1. A linkage mechanism for connection between a pair of mutually movable members to provide torsionally restrained conical motion therebetween comprising:

a generally hemispherical yoke connected to one of the movable members;

a center support member connected to the remaining movable member, said center support member being nested within and spaced apart from said yoke;

a first pair of torsion bars projecting radially outwardly from and connected to the sides of said yoke;

a second pair of torsion bars projecting radially outwardly from and connected to said center support, said first and second pairs of torsion bars being substantially coplanar and defining a cross-shaped configuration in plan; and

brace means interconnecting adjacent torsion bars for transmitting torsional forces therebetween with said torsion bars functioning to restrain the relative motion between the movable members.

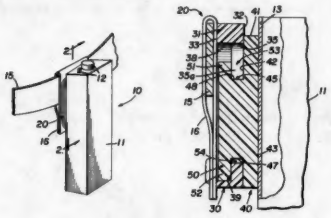
4,605,335
QUICK-RELEASE CONNECTOR WITH TEARDROP-SHAPED CONFIGURATION

Edward C. Otrusina, 19 W. 240 Oldfield Rd., Downers Grove, Ill. 60515

Filed Feb. 28, 1985, Ser. No. 706,673
Int. Cl.[4] F16D *1/06*; A45F *5/00*
U.S. Cl. 403—348 17 Claims

1. Quick-release connecting apparatus for detachably interconnecting two objects, such as a belt and a device to be carried on the belt, including in combination: a female member adapted to be secured to one of the objects and having a front surface, said female member having a generally teardrop-shaped opening in the front surface thereof and a recess formed behind said opening, said opening having a part-circular portion and a lobe portion projecting from said part-circular portion and having an axis which bisects the arc of said part-circu-

lar portion, said recess being larger than said opening and communicating with the entire area of said opening and defining a bearing surface along the periphery of said opening, a male member adapted to be secured to the other object and having a stud extending therefrom and a button at the distal end of said stud, said button having the same configuration as said opening and being sized to pass therethrough but having a cross-sectional area substantially greater than that of said stud so that said button forms a flange extending laterally from said



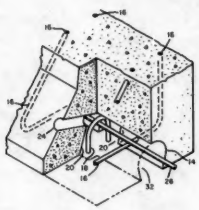
stud, said male member being rotatable about the axis of said stud between first and second positions when said stud is disposed in said opening with said button disposed in said recess, said button being aligned with said opening when said male member is in the first position thereof for permitting insertion of said button into and withdrawal of said button from said opening, said button being out of alignment with said opening and engageable with said bearing surface when said male member is in the second position thereof for preventing detachment of said male body from said female body.

4,605,336

JOINT CONSTRUCTION OF CONCRETE MEMBERS

Robert A. Slaw, Sr., Hemlock Trail, R.D. 4, Lehighton, Pa. 18235

Filed Jul. 12, 1984, Ser. No. 630,281
Int. Cl.[4] E01F *13/00*
U.S. Cl. 404—6 **6 Claims**



1. A union for concrete units intended to be used to couple a precast concrete parapet to a substantially flat concrete roadway surface, comprising in combination:

a precast concrete parapet having a substantially longitudinal horizontal groove therethrough;

a substantially flat concrete roadway contiguous to said precast concrete parapet, said longitudinal groove being adjacent to said concrete roadway;

a first coupling member extending from said precast concrete parapet to within said longitudinal groove;

a second coupling member extending from said concrete roadway to within said longitudinal groove;

a locking rod positioned in coupling relationship with said first coupling member and said second coupling member;

pressure pumped concrete grout compound within said longitudinal groove enclosing said first coupling member, said second coupling member and said locking rod;

a portion of said longitudinal horizontal groove adjacent to said second coupling member having an outwardly flaring wedged shaped cross chamber section;

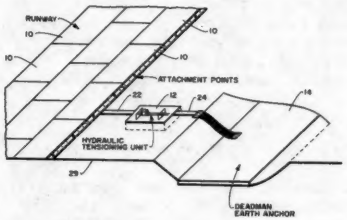
a portion of said longitudinal groove adjacent to said first coupling member having an inwardly flaring wedged shaped cross member section.

4,605,337

EXPEDIENT RUNWAY SURFACING WITH POST TENSIONING SYSTEM FOR EXPEDITIONARY AIRFIELDS

Preston S. Springston, Oxnard, Calif., and Richard L. Claxton, Evanston, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1985, Ser. No. 702,091
Int. Cl.[4] E01C *9/08*
U.S. Cl. 404—35 **6 Claims**



1. An expedient airfield runway surfacing system having an anchoring and tensioning system for maintaining constant tension on the runway while allowing for both expansion/contraction due to temperature and dynamic aircraft braking loads, comprising:

a. A plurality of prefabricated portable panels interconnected together to form airfield surfacing matting over a prepared ground subsurface and operating to distrubute aircraft wheel loads to the underlying subsurface;

b. a plurality of hydraulic automatic tensioning means and earth anchoring means positioned at at least one end of the airfield along the perimeter of the airfield surfacing matting formed from said the plurality of prefabricated portable panels;

c. said tensioning means each having one side thereof connected to an edge of said airfield surfacing matting and the opposite side thereof connected to an earth anchoring means and being adjustable to airfield runway expansion/-contraction conditions as determined by the ambient temperatures of said airfield surfacing matting;

d. each said tensioning means being operable to maintain prescribed reaction forces to provide automatic constant and and uniform tension on said airfield surfacing matting during dynamic shock loading due to aircraft landing and braking while simultaneously compensating for expansion/contraction of said airfield surfacing matting due to ambient temperature changes; wherein development of a matting bow wave ahead of the landing gear of braking aircraft is avoided and warping of the runway surfacing as a result of expansion/contraction is prevented.

4,605,338

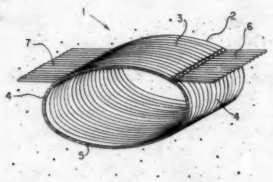
CULVERT

Carl W. Peterson, 200, 7603-104 Street, Edmonton, Alberta, Canada

Filed May 22, 1984, Ser. No. 612,819
Claims priority, application Canada, May 31, 1983, 429322
Int. Cl.[4] E01F *5/00*
U.S. Cl. 405—124 **10 Claims**

1. A culvert structure comprising an elongated conduit having top, bottom and side surfaces, said culvert structure comprising a pair of wing members being attached to opposite

side surfaces of said conduit along a marginal edge of each of said wing members and extending laterally outwardly therefrom a substantial distance for distributing downward forces acting on the culvert outwardly from said conduit when in use,



the attachment of each of said wing members to said conduit being so constructed that reactive forces developed by said wing members are transferred to the top of said conduit without causing significant bending moment effects in the top surface of said conduit.

4,605,339

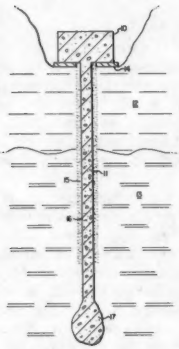
SITU PILE CONSTRUCTION IN GROUND LIABLE TO UPLIFT

Roger A. Bullivant, Burton-on-Trent, England, assignor to Roger Bullivant of Texas, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 288,133, Jul. 29, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,564

Int. Cl.⁴ E02D *5/34, 5/44*

U.S. Cl. 405—237 **13 Claims**



1. A method of constructing a pile in situ through a region of unstable soil to rest on a region of stable soil, said method comprising the steps of:

(a) forming a hole through the unstable soil to a region of stable soil by allowing an elongate self-propelled soil displacing mole to descend to the stable soil, said mole drawing down with itself a first tubular member of internal diameter larger than the external diameter of the mole to line the hole;

(b) withdrawing the mole up through the bore of the first tubular member;

(c) inserting a second tubular member within the first tubular member, the second tubular member having an external diameter smaller than the internal diameter of the first tubular member and an internal diameter larger than the diameter of said mole;

(d) filling the hole within the second tubular member with concrete;

(e) inserting said mole into the filled hole before the concrete sets to produce a pile footing in said stable soil at the base of the second tubular member;

(f) withdrawing said mole;

(g) refilling the hole in said second tubular member with concrete and allowing the concrete to set to form an in situ double cased pile with an integral footing; and

(h) completing steps (d) through (g) whereby the first tubular member may receive heave loads from the surrounding soil and move longitudinally along the axis of the pile without transfer of such loads to the second tubular member thereby isolating the pile from frictional engagement with the unstable soil.

4,605,340

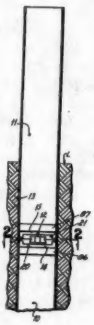
PILE SPLICE

Karl Stephan, 550 Inlet Dr., Marco Island, Fla. 33937

Filed Mar. 28, 1984, Ser. No. 594,258

Int. Cl.⁴ E02D *5/10, 5/30;* **F16B** *7/00*

U.S. Cl. 405—252 **30 Claims**



1. Splicing apparatus for joining pilings together and comprising:

a splice plate adapted to be mounted on each of the adjoining ends of two piles to be joined together, each said plate including a groove extending from one side of said plate to another therein;

at least two movable, separate and independent cam means for disposition on opposite sides of said grooves within adjoining plates for drawing said plates together, and

drive wedge means, independent of said cam means, for engaging and expanding said cam means within said grooves to draw and hold adjacent splice plates together.

4,605,341

MINE ROOF SUPPORT AND ATTACHMENT MEANS THEREFOR

Archelaius D. Allen, Preston, England, assignor to Dobson Park Industries Plc., Nottingham, England

Filed Oct. 22, 1984, Ser. No. 663,496

Claims priority, application United Kingdom, Oct. 22, 1983, 8328281

Int. Cl.⁴ E21D *15/44, 23/08*

U.S. Cl. 405—297 **16 Claims**

1. A mine roof support suitable for use in thin seam mines, said support comprising:

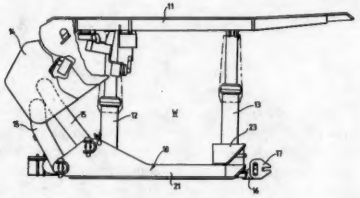
a base unit having a height;

a mine roof engaging canopy;

support means for separating said base unit and said canopy to provide a miner's walkway having a vertical space between said base unit and said canopy;

attachment means connected to said base unit for attaching the mine roof support to a flexible conveyor, said attachment means including at least two telescopic rams each

having a piston and a cylinder, a first common connection means for connecting said cylinders together, and a second common connection means for connecting said pistons together, at least one of said first and second common connection means including fluid flow passages through which hydraulic fluid can be fed simultaneously to each said cylinder, said rams being extended or retracted in unison when fluid is fed to or removed from said cylinders; and



a protective structure connected to said base unit, said rams being positioned in side-by-side relationship under said protective structure, said protective structure providing a platform in said walkway which miners can walk or crawl over, or sit on, said attachment means and said protective structure not extending substantially above said height of said base unit, thereby leaving said vertical space available in said walkway substantially unaltered.

4,605,342

DEVICE FOR INTRODUCING DOSED QUANTITIES OF PULVERIZED SOLID MATERIALS INTO A CARRIER GAS STREAM

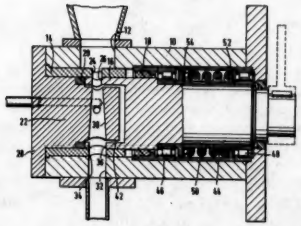
Edouard Legille, Luxembourg; Léon Ulveling, and Pierre Mailliet, both of Howald, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Apr. 10, 1985, Ser. No. 721,565

Claims priority, application Luxembourg, Apr. 11, 1984, 85298

Int. Cl.[4] B65G *53/46*

U.S. Cl. 406—129 **16 Claims**



1. A device for introducing pulverized materials in a carrier gas stream comprising:

housing means;

inlet aperture means in said housing means for delivery of pulverized material;

outlet aperture means in said housing means, said outlet aperture means being positioned in opposing relation to said inlet aperture means;

inner sleeve means in said housing and extending across said inlet and outlet aperture means, said inner sleeve means having an axial bore;

outer sleeve means, said outer sleeve means being coaxial with said inner sleeve means and extending across said inlet and outlet aperture means, at least one of said outer and inner sleeve means being rotatable about its longitudinal axis;

means for rotating at least one of said outer and inner sleeve means;

at least a first pair of opposing slots on said inner sleeve means and at least a second pair of opposing slots on said outer sleeve means, said first and second pairs of opposing slots being capable of mutual overlapping alignment with each other and with said inlet and outlet aperture means to define a pair of variable sized opposing passages;

cheek means positioned on one end of said housing means, said cheek means including an extension portion which extends axially into said inner sleeve means axial bore and extending across said inlet and outlet aperture means, said cheek means extension portion including a channel therethrough, said channel being fixed in axial alignment with said inlet and outlet aperture means and being connectable to a pressurized fluid source.

4,605,343

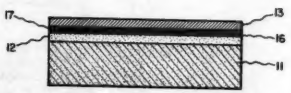
SINTERED POLYCRYSTALLINE DIAMOND COMPACT CONSTRUCTION WITH INTEGRAL HEAT SINK

Louis E. Hibbs, Jr., Schenectady, and George C. Sogoian, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,242

Int. Cl.[4] B24B *1/00*

U.S. Cl. 407—119 **6 Claims**



1. In a composite tool insert construction in which a layer of sintered polycrystalline diamond is supported on and bonded to a cemented carbide substrate, the improvement comprising a metallic heat sink layer having a thickness between about 0.01 and 0.1 inches and covering at least the outer diamond surface of said diamond layer, said heat sink layer being selected from the group consisting of copper, tungsten alloyed with cobalt, and nickel or iron and nickel phosphorus alloys, and said heat sink layer being bonded to said diamond surface via a bonding medium comprising at least one intermediate layer of metal selected from the group consisting of molybdenum, tungsten, titanium, zirconium and chromium.

4,605,344

DEVICE FOR DRILLING HOLES IN A STACK OF PLATES

Gunter Hartmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 636,923

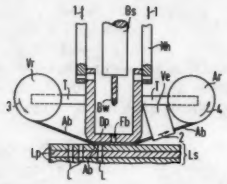
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333978

Int. Cl.[4] B23B *39/00*

U.S. Cl. 408—95 **17 Claims**

1. In a device for drilling holes into a workpiece, said device having a drill spindle accepting a drill bit and clamping means for engaging the workpiece adjacent the location of the hole being drilled and for holding the workpiece during the drilling operation, the improvements comprising means for positioning a cover tape on the surface of the workpiece beneath clamping means and directly beneath the drill bit, said means for positioning enabling the tape to be displaced in a longitudinal

direction, and said clamping means pressing the cover tape onto a surface of the workpiece during a drilling operation so



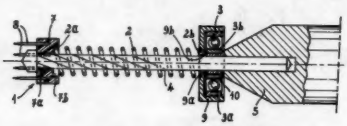
that as the drill bit drills through the cover tape and into the workpiece, the tape prevents ejecta from the workpiece.

4,605,345

DRILLING APPARATUS WITH WALL-COVERING PROTECTION

Michel Giughèse, 51, rue de la Balme, Lyon, France

Filed May 25, 1984, Ser. No. 614,437
Claims priority, application France, May 25, 1983, 83 08952
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—95 **10 Claims**



1. A tool for use in interior decoration for the drilling of a hole in a support covered by a yieldable and tearable covering, the tool comprising:

a chuck member rotatable about an axis;

a solid drill bit received coaxially in said chuck member and adapted to bore axially forward into said support and having a front end remote from said chuck member for penetrating axially forward through said covering into said support when pressed axially forward thereagainst while rotating about the axis;

a covering-protective sleeve member closely surrounding said bit and having a front face turned away from said chuck member a multiplicity of pins projecting axially forward from said face and forming respective axially forwardly directed points distributed uniformly in at least one circle around said bit for piercing said covering, lodging in said support, and holding said sleeve member out of contact with said covering;

a coil spring surrounding said bit and braced axially between said sleeve member and said chuck member and enabling travel of said bit through said sleeve member with compression of said spring; and

at least one bearing operatively connected between one of said members and said spring to enable rotation of said chuck member and said bit while permitting said sleeve member to be immobilized by said points upon engagement of said covering therewith.

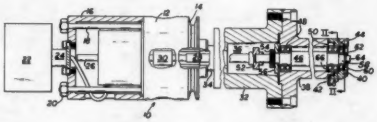
4,605,346

TOOL WEAR COMPENSATOR

David J. Trevarrow, Horton, Mich., assignor to Schrader Machine & Tool, Inc., Hanover, Mich.

Filed Jun. 4, 1984, Ser. No. 616,714
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—147 **4 Claims**

1. A fine adjustment for cutting tools mounted upon a machine tool wherein a cutting tool is mounted upon a laterally displaceable tool carrier affixed to a support, the improvement, comprising, the tool carrier comprising an elongated lever having an axis, an outer end, an inner end and a spherical pivot surface intermediate said ends defining a lever pivot point, a pivot support defined upon the support pivotally supporting said lever at said spherical pivot surface, said pivot support including a key preventing rotation of said lever about its axis, a cutting tool mounted on said lever outer end, a shaft rotat-



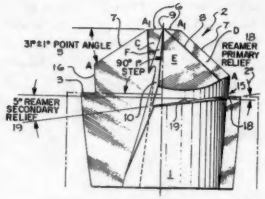
ably mounted upon the support having an axis of rotation, a rotatable eccentric connection interconnecting said shaft and said lever inner end having an eccentric offset with respect to said shaft axis of rotation whereby rotation of said shaft laterally displaces said lever inner end pivoting said lever outer end and cutting tool about said lever pivot point laterally with respect to the shaft axis, and an electric stepping motor drivingly connected to said shaft for rotatably indexing said shaft.

4,605,347

HIGH SPEED DRILL REAMER

Marvin S. Jodock, San Jose, Calif., and Fred Maternus, Chicago, Ill., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif. and National Carbide Tool, Inc., Skokie, Ill.

Filed Dec. 27, 1982, Ser. No. 453,278
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—224 **17 Claims**



1. A drill bit having a pair of spiral flutes separated by a pair of webs, each of said webs terminating at the cutting end of said bit in first, second, third, and fourth facets, a trailing edge and primary and secondary cutting edges contained in the plane of said first facet, each of said webs having a step floor extending from the periphery of said webs to a smooth wall, said wall extending parallelly to the drill axis from said step floor to said facets, and a relief in said step floor intersecting with said flute surface thus to constitute a reamer cutting edge.

4,605,348

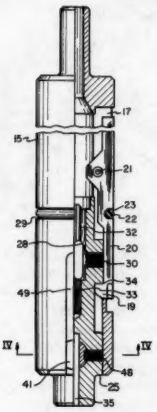
QUICK RELEASE ADAPTER

Charles J. DeCaro, Pittsburgh, Pa., assignor to Textron Inc., Providence, R.I.

Filed Oct. 29, 1982, Ser. No. 437,542
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.
Int. Cl.[4] B23B *31/10*
U.S. Cl. 408—239 A **1 Claim**

1. In a reversible adapter for a power driven torquing tool, including an elongated cylindrical body having a bore extending inward from each of a first and second end and adapted to accommodate a fastener driver and a drill bit respectively, said

adapter being connectable at both its first and second ends to the torquing tool so as to be reversible in relation thereto, the improvement comprising quick release means cooperating with at least one of said bores to detachably retain the driver or bit within the bore, said driver or bit having a flattened shank section said body including an opening radially therethrough and in communication with said at least one bore, and a shuttle, said shuttle including an axially extending threaded bore accommodating a first set screw for engaging the flattened shank



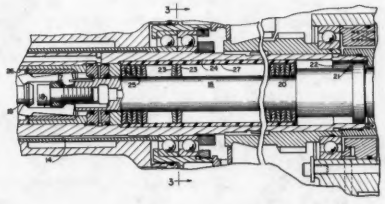
section, a clear through slot extending transverse of the shuttle longitudinal axis and in communication with the threaded bore and a J-shaped peripheral slot accommodating a second set screw extending radially through said adapter, said shuttle being rotatable on an axis perpendicular to the longitudinal axis of the adapter between a first position wherein the second set screw is accommodated by a short leg of the J-shaped slot and a second position wherein the second set screw is accommodated by a long leg of the J-shaped slot, said shuttle being depressable to release the driver or bit in said second position.

4,605,349

SPRING CENTERING DEVICE FOR TOOL SPINDLES

Kendall F. Bone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jan. 7, 1985, Ser. No. 689,260
Int. Cl.[4] B23C *5/26*
U.S. Cl. 409—141 **4 Claims**



1. In a machine having a rotatable tool spindle and a central spring-assisted mechanism utilizing a linear-operating spring, a spring centering device, comprising:

(a) radially yieldable means coaxially mounted with said spindle for contacting at least a peripheral portion of said linear-operating spring; and

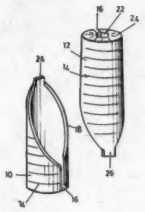
(b) means for supporting and centering said yieldable means while said yieldable means is in contact with said spring.

4,605,350

EXPANSION SHELL

Izak Chater, 25 Robin Street, and Allan H. G. Brown, 35 Marilyn Street, both of Flamwood, Klerksdorp, South Africa

Filed Oct. 25, 1983, Ser. No. 545,273
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—75 **6 Claims**



1. An expansion assembly which is adapted during use to be expanded into contact with the wall of a hole in which it is placed, comprising:

a first shell member of generally tubular shape, the member having a first end which is inclined to its longitudinal axis from a first position at which the wall of the member has substantially its greatest axial length to a second position, diametrically opposing the first position, at which the wall of the member has substantially its shortest axial length, the first end being disposed substantially in a plane, the member being formed with at least a first line of weakness in its wall which extends in the axial direction of the member and with a formation positioned at the first end where the wall of the member has substantially its greatest axial length, the formation projecting out of the plane of the first end;

a second shell member that is substantially identical to the first shell member; and

an elongate member passing through the first and second shell members, the shell members being arranged so that their first ends respectively are opposed to and in contact with each other and so that the formation of each shell member engages the first line of weakness of the other shell member.

4,605,351

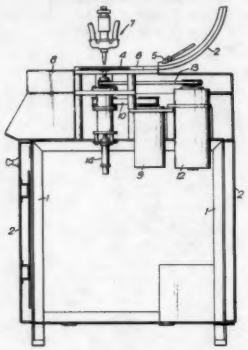
CLOSURE LINING MACHINE

Clive D. Hatcher, Marlow Bottom; Alan Hill, Stanmore, and Geoffrey W. King, Northolt, all of England, assignors to W. R. Grace & Co., Lexington, Mass.

Filed Nov. 15, 1984, Ser. No. 671,550
Int. Cl.[4] B21D *51/46*
U.S. Cl. 413—58 **11 Claims**

1. A closure lining machine comprising a star wheel having one or more pockets in its outer peripherial edge to receive a closure to be lined and move it to a lining applicator and thence to an outlet, the lining applicator being located above the star wheel and in alignment with the closure in a pocket of the star wheel to apply a lining compound to the closure, the star wheel being driven by a stepping motor and a control circuit including a variable means, variable in dependence upon the number of pockets in the star wheel, the control circuit controlling the stepping motor and hence movement of the star wheel and also controlling operation of the lining applicator so

that upon changing the star wheel to accommodate a different size of closure the control circuit is varied to synchronize the



movement of the star wheel and the operation of the lining applicator to the different sizes of closure.

4,605,352

CENTRIFUGAL PUMP FOR PULVERIZED MATERIAL

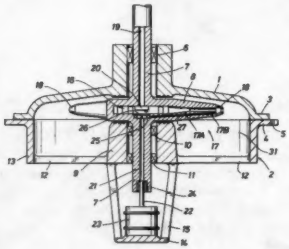
Andrew M. Scott; Bernardus B. Quist, and Teunis Terlouw, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 699,494, Feb. 8, 1985, abandoned, which is a continuation of Ser. No. 435,011, Oct. 18, 1982, abandoned. This application Jun. 18, 1985, Ser. No. 746,441

Claims priority, application United Kingdom, Nov. 20, 1981, 8135066

Int. Cl.[4] B65G *53/40*

U.S. Cl. 414—217 1 Claim



1. A centrifugal pump for continuously feeding pulverized material from a low pressure zone into a high pressure zone, the pump comprising a hollow rotor with a central chamber communicating with a plurality of channels extending toward the outer rim of the rotor, each channel communicating at the outlet thereof with a nozzle and the interior of each nozzle communicating with a conduit for the supply of gas, the interior of each nozzle being frusto-conically shaped, and each nozzle being connected to the rotor by a flexible bellows allowing vibration of the nozzle with respect to the rotor.

4,605,353

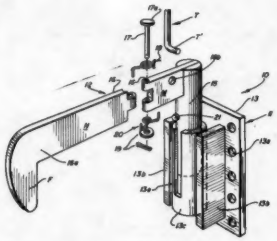
VEHICLE RESTRAINT

Norbert Hahn, South Milwaukee, Wis., and Arthur A. Olson, Jr., Glenview, Ill., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Aug. 24, 1983, Ser. No. 526,090

Int. Cl.[4] B60D *1/00;* B65G *67/02*

U.S. Cl. 414—401 5 Claims



1. A restraint for releasably securing a parked vehicle against an adjacent structure and preventing accidental transverse movement of the vehicle away from the structure, said restraint comprising a first means fixedly mountable on the structure, and a second means mounted on a segment of said first means for selective relative movement in a vertical plane and for selective relative pivotal movement about a vertical axis defined by said first means segment between operative and inoperative modes only when said second means assumes a predetermined elevated position with respect to the first means segment and a surface supporting and subtending the parked vehicle, said second means having an elongated downwardly extending first section in vertical sliding engagement with said first means segment and being adapted to turn about a longitudinal axis of said first section which is coaxial with said vertical axis, and an elongated second section projecting angularly from an upper end portion of said first section, said second section having a distal end portion provided with a depending projection, said distal end portion being adapted, when said second means is in an operative mode, to overlie and have the depending projecting thereof interlock with a transverse member depending from a portion of the parked vehicle adjacent the structure; said second section including releasable safety means effecting separation of said first section and at least a portion of said second section upon an external pulling force exceeding a predetermined amount being exerted on the depending projection of the distal end portion of said second section when said second means is in an operative mode; said second section also including inner and outer segments connected to one another for pivotal movement about a secondary axis parallel to and spaced from said vertical axis, said inner segment having one end thereof fixedly connected to the upper end portion of said first section, said outer segment including the depending projection of the distal end portion; the safety means including a shearable pintle effecting the pivotal connection between the inner and outer segments.

4,605,354

SLIP SENSITIVE ROBOT GRIPPER SYSTEM

Timothy P. Daly, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,988

Int. Cl.[4] B66C *1/00*

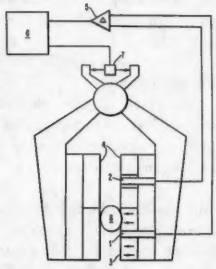
U.S. Cl. 414—730 6 Claims

1. A gripping robot having a gripper characterized by

(a) slip sensing means (1,2,3,4,5) at least partially mounted in the gripper and providing an output related to rapid acceleration of a linearly deformed resilient pad as it springs back to rest position;

(b) slip determining control means (6), responsive to said slip

sensing means and other inputs, to provide control of gripping action as a function of inputs including output from said slip sensing means, to provide a gripper control output; and



(c) servo means (7) responsive to said control means 6 to provide controlled gripping action to the gripper;

whereby an object held by the gripper may be imparted controlled slipping motion.

4,605,355

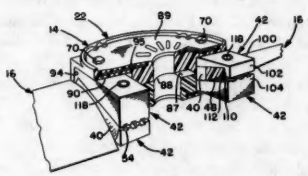
PROPELLER

Robert J. Davis, Newburry; Charles R. Anspach, Painesville, and John T. Venaleck, Madison, all of Ohio, assignors to Competition Aircraft, Inc., Painesville, Ohio

Filed Mar. 31, 1983, Ser. No. 480,711

Int. Cl.[4] B64C *11/06*

U.S. Cl. 416—208 **33 Claims**



1. An aircraft propeller comprising a rotatable hub having a plurality of sockets, a plurality of propeller blades each with an air foil portion and a root portion of noncircular transverse cross-section, and a plurality of pairs of opposed pitch blocks received within respective sockets to hold therebetween the root portions of respective blades, each pair of pitch blocks having a noncircular surface engaging a noncircular outer side of the root portion of the respective blade to fix the blade at a thusly determined pitch angle to the axis of the hub.

4,605,356

APPARATUS FOR CONTINUOUSLY PRESSURE-FEEDING SLURRY

Kenji Uchida, Kashiwa; Masakatsu Sakamoto, Matsudo; Makoto Saito, Ibaraki, and Yukishige Kamino, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

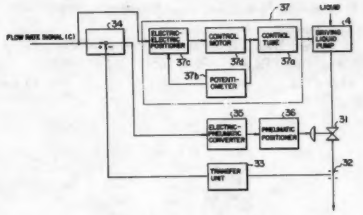
Filed Feb. 10, 1984, Ser. No. 578,789

Claims priority, application Japan, Mar. 16, 1983, 58-42148

Int. Cl.[4] F04F *11/00*

U.S. Cl. 417—102 **1 Claim**

1. A continuous pressure slurry feeding apparatus comprising a plurality of supply chambers respectively accommodating a float, a driving liquid pump and a slurry pump, said supply chambers being arranged in parallel to each other and being respectively connected to driving liquid supply and discharge pipes by means of change-over valves for pressure feeding of driving fluid in and out of the upper portion of each of the chambers, slurry supply and discharge pipes respectively connected to the lower portion of each of the chambers by means of lift type change-over valves for pressure feeding of slurry in and out of the lower portion of each of the chambers, sensor means for detecting a position of the float floating on an interface between slurry and driving liquid within each of said supply chambers, means for opening/closing said valves provided for the upper and lower portions of each of said supply chambers in accordance with a detecting signal of said sensor means whereby the slurry may be transferred under pressure through the lower portions of the supply chambers, and wherein means are provided for maintaining a differential pressure between a pressure at a normal flow rate and a pressure in a shut-off condition of the valve of the driving liquid pump which is higher than a pressure required for opening the lift type change-over valves positioned on the lower side of the chambers, wherein said means for maintaining includes a rotational speed control of said driving liquid pump which is carried out by a rotational speed control mechanism for keeping the rotational speed of the driving liquid pump under a condition in which an output pressure is provided exceeding the differential pressure of said driving liquid pump, and wherein said rotational speed control mechanism comprises a fluid joint having a control tube, a potentiometer, and electric-electric positioner and a control motor, whereby the rotational speed of said driving liquid pump corresponding to a flow rate which is required for feeding the slurry under pressure is controlled by adjusting the position of said control tube of said fluid joint.



4,605,357

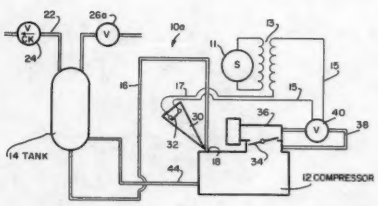
LUBRICATION SYSTEM FOR A COMPRESSOR

Jeffrey S. Keith, Charlotte, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 621,750, Jun. 18, 1984. This application Nov. 25, 1985, Ser. No. 801,245

Int. Cl.[4] F04B *39/02, 49/00*

U.S. Cl. 417—228 **5 Claims**



1. In combination with a gas compressor, a lubrication system therefor, comprising:

first means for conducting gas to said gas compressor;

second means for conducting gas and lubricant from said gas compressor;

reservoir means for storing lubricant; and

conduit means for supplying lubricant from said reservoir means to said gas compressor;

means, coupled to said first means, operative for controllingly modulating the gas conduct of said first means;

means, coupled to said conduit means, for directly communicating with lubricant therewithin and for sensing a given condition of lubricant therein; and

means, coupled to said sensing means and said modulating means, responsive to a given setpoint of said given condition, as sensed by said sensing means, for operating said modulating means.

4,605,358

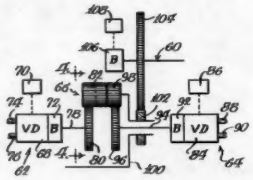
INTEGRATED POWER DRIVE AND POWER TRANSFER SYSTEM

Wesley A. Burandt, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 24, 1984, Ser. No. 685,909

Int. Cl.[4] F04B *35/00;* **F16H** *39/14, 39/00*

U.S. Cl. 417—236 **16 Claims**



1. A power drive and power transfer system comprising, a pair of power conversion devices connected one in each of a pair of separate power circuits and each having a rotatable drive shaft associated therewith, gear means interconnecting said rotatable drive shafts, an output shaft connected to said gear means to be driven thereby and transmit power from said power conversion devices to provide a power drive, and means for holding said output shaft against rotation whereby power may be transferred from one power circuit to the other through said gear means and said power conversion devices.

4,605,359

RADIAL PLUNGER PUMP

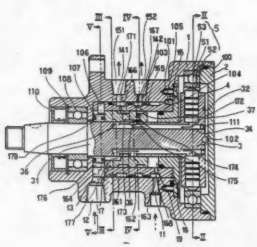
Masahiko Suzuki; Masatoshi Koroyanagi; Kouichi Moriguchi, and Kazuma Matsui, all of Aichi, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 28, 1985, Ser. No. 706,930

Claims priority, application Japan, Feb. 28, 1984, 59-38364

Int. Cl.[4] F04B *27/04, 49/06*

U.S. Cl. 417—270 **8 Claims**



1. A radial plunger pump, comprising:

a housing;

a rotor including a shaft having a substantially coaxially circumferential enlargement providing a body thereon arranged for rotation therewith;

means defining a plurality of angularly spaced, radially aligned, radially outwardly opening cylinder cavities in said rotor body;

a respective piston-like plunger sealingly, slidingly received in each said cylinder cavity and being constructed and arranged for reciprocating movement radially of said rotor body upon rotation of said rotor thereby to increase and decrease the volume of a respective chamber defined in the respective said cavity, radially inwardly of an axially inner end of such plunger;

means defining a cavity in said housing including a first portion which is constructed and arranged to enclose said rotor body and an adjoining second portion which is constructed and arranged to enclose a portion of said shaft;

said rotor body and shaft portion being received in said first and second portions of said housing cavity, means journalling said rotor with respect to said housing for rotation about the longitudinal axis of said rotor; with a portion of said shaft being accessible for application of rotary power thereto for rotating said rotor about said axis;

said first portion of said housing cavity having inner peripheral wall means including, cam surface means which are curved about to form an endless path that is eccentric with respect to said rotor body;

said plungers being constructed and arranged to ride in centrifugally-urged contact with said cam surface means as said rotor is rotated, thereby oscillating each plunger in the respective said cylinder/cavity and correspondingly cyclically increasing and decreasing the volume of the respective said chamber formed in such cylinder cavity;

means defining a respective fluid passageway communicated with each said cylinder cavity chamber and extending within said rotor body and said shaft to at least one site located intermediate the longitudinal extent of such shaft, at which at least one site each such fluid passageway emerges from said shaft;

means defining at least one fluid suction port through said housing to said housing cavity;

means defining at least two fluid discharge ports through said housing from said housing cavity;

a switching valve received within and movably mounted on said housing as a tubular member coaxially received radially between said shaft and said housing;

said switching valve including suction passageway means constructed for periodically connecting a continually changing at least one but less than all of said fluid passageways of said rotor to said at least one fluid suction port of said housing and these only during a predetermined portion of each cycle of rotation of said rotor while each corresponding cylinder cavity chamber is increasing in volume;

said switching valve further including discharge passageway means constructed and arranged for periodically connecting a continually changing at least one but less than all of said fluid passageways of said rotor to a selectable at least one of said at least two fluid discharge ports of said housing and these only during a predetermined portion of each cycle of rotation of said rotor while each corresponding cylinder cavity chamber is decreasing in volume;

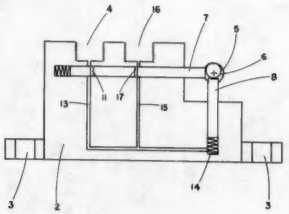
said switching valve being constructed and arranged for movement between at least two positions in at least one of which said discharge passageway means connect the respective said at least one fluid passsageway of said rotor with at least one different one of said at least two fluid discharge ports of said housing than it does when positioned in at least another of said at least two positions.

4,605,360

REVERSIBLE EXPANSIBLE CHAMBER HYDRAULIC PUMP

James M. Swartwood, 7927 Lazy S. La. NE., Bremerton, Wash. 98310

Filed Jan. 29, 1985, Ser. No. 696,166
Int. Cl.[4] F04B *19/22, 21/02*
U.S. Cl. 417—518 **1 Claim**



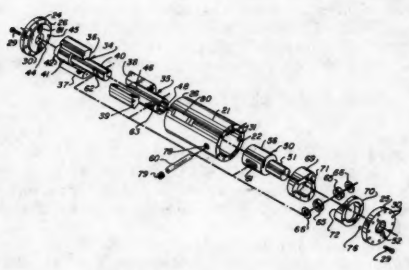
1. A reversible, expansible chamber hydraulic pump comprising, a pump block, first and second fluid ports disposed in said block, a rotating input shaft having an axis of rotation, said input shaft having an eccentric cam, a pump piston reciprocating in a pump chamber, a reciprocating slide valve, said pump piston and said slide valve both being disposed perpendicular to said input shaft, said pump piston and said slide valve being actuated by said eccentric cam, said pump piston and said slide valve being disposed perpendicular to each other, fluid passages being provided such that said reciprocating slide valve alternately communicates one of said ports to the pump chamber, and at the same time blocks communication between the other port and the pump chamber.

4,605,361

OSCILLATING VANE ROTARY PUMP OR MOTOR

Robert K. Cordray, 1441 W. 46th Ave., #17, Denver, Colo. 80211

Filed Jan. 22, 1985, Ser. No. 693,136
Int. Cl.[4] F02B *53/00*
U.S. Cl. 418—38 **9 Claims**



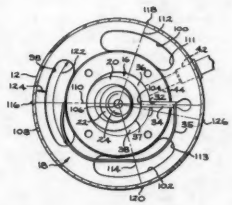
1. In an oscillating vane rotary pump or motor including a cylinder housing a pair of co-axial rotors each having a plurality of vanes theron, each of said rotors having an axially extending shaft, a power shaft journaled in said cylinder and having a portion extending outwardly of said cylinder and an internal quill portion housed within said cylinder, said rotor shafts and said quill being co-axially telescoped together, and a cam mechanism operatively coupling said power shaft quill and said rotor shafts for rotation with respect to said cylinder and for oscillating said rotor shafts relative to each other in response to relative rotation between said cylinder and said rotors, said cam mechanism comprising means defining an axially elongated slot in said quill, means defining a helical slot in each of said rotor shafts, said helical slots in said rotor shafts each being of opposite hand with respect to the other, a drive pin extending through said quill and helical slots, and a cam including a cam roller on said pin and a cam track on said cylinder for reciprocating said pin axially in said slots in response to rotation of said rotors in said cylinder, thereby effecting relative rotational oscillational movement between said rotors and thereby the vanes supported thereon for providing alternating expanding and contracting chambers between said vanes.

4,605,362

ROTARY COMPRESSOR AND METHOD OF ASSEMBLY

Gerald E. Sturgeon, and Robert I. Derman, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 17, 1985, Ser. No. 745,561
Int. Cl.[4] F04C *29/00;* **B23P** *15/00;* **B23K** *9/18, 31/02*
U.S. Cl. 418—63 **18 Claims**



1. In a rotary compressor of the type having an outer metal cylindrical casing, a cylinder as viewed in top plan view with a circular chamber the center of which is in alignment with the central axis of the cylinder and having a circular outer wall slightly smaller than the inside diameter of the casing, a vane slot in the cylinder open at one end into the chamber, a vane in the vane slot to divide the chamber into a high pressure side and a low pressure side, wherein the improvement comprises:

three curved elongated ports spaced from each other in the cylinder between the chamber and outer wall, the length of each port and thickness of the metal between the port and outer wall of the cylinder cooperating to provide adequate strength for welding and sufficiently flexible to absorb any distortion forces caused by welding without transmitting any significant distortion forces to the vane slot, and

welds joining the cylinder outer wall to the casing, said welds being adjacent the three ports.

4,605,363

GEAR PUMP WITH PIVOTED BUSHINGS THAT CAN DEFLECT

Richard E. Walsh, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 25, 1985, Ser. No. 715,675
Int. Cl.[4] F04C *2/18, 15/00;* **F16C** *23/04*
U.S. Cl. 418—131 **6 Claims**

1. In a gear pump including:

a housing having an interior wall;

a pumping chamber within said housing and defined by said interior wall;

opposed inlet and outlet ports in said housing extending to said chamber;

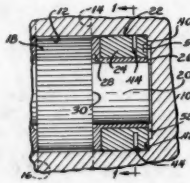
a pair of meshed gears within said chamber;

a pair of shafts within said housing and said chamber, each shaft mounting a respective one of the gears of said pair; and

bushings within said chamber journalling said shafts, the radially outer surface of at least some of said bushings and

the adjacent portion of said interior wall defining an annular space that is narrow medially of said some bushings and of increasing width axially toward the ends of said some bushings to allow said some bushings to pivot in said housing;

the improvement wherein said some bushings, near their ends remote from said gears, at least on their sides remote



from said outlet include radially outwardly opening slots extending generally transverse to said shafts, said slots being sufficiently near said ends and extending sufficiently into said bushings as to allow said ends to deflect relative to the remainder of the associated bushing and sealingly engage the adjacent portion of said interior wall when said some bushings pivot in said housing.

4,605,364

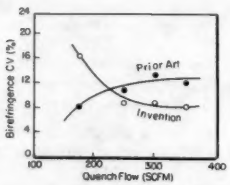
MELT-SPINNING APPARATUS FOR POLYESTER FILAMENTS

Douglas D. Roth, Matthews, and Fredrick A. Ethridge, Waxhaw, both of N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 422,116, Sep. 23, 1982, Pat. No. 4,514,350. This application Jan. 25, 1985, Ser. No. 680,452

Int. Cl.[4] B29D *7/20*

U.S. Cl. 425—72 S **3 Claims**



1. An improved melt-spinning apparatus for forming polymeric filaments by extruding polymer through orifices in a spinnerette and thereafter quenching the melt-spun filaments which apparatus comprises a spinnerette means for extruding molten polymer through a plurality of orifices and a centrally located quench means for passing a vapor or gas radially outward across the polymeric filaments extruded from said spinnerette means, said orifices being arranged in a plurality of concentric rows that are essentially perpendicular to the, flow direction of the quenching vapor or gas wherein the improvement comprises:

the diameter, d_1, of the orifices in the row closest to the quench means is greater than the diameter, d_2, of the orifices in the row furtherest from the quench means, by an amount such that d_1/d_2 is in the range from 1.03 to 1.20.

4,605,365

BLOWING HEAD FOR MAKING TUBULAR PLASTIC FILMS

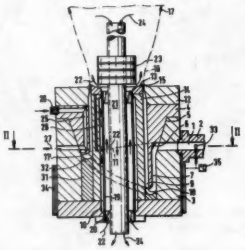
Hartmüt Upmeier, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 2, 1985, Ser. No. 751,145

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1984, 3425371

Int. Cl.[4] B29C *47/12, 47/88*

U.S. Cl. 425—72 R **3 Claims**



1. A blowing head for making tubular films from thermoplastic materials, wherein a lateral inlet for supplying molten material opens into a first annular passage having an upper boundary wall, which extends in a plane which is substantially radial with respect to the blowing head, and wherein a second annular passage is provided, which is concentric to the first annular passage and leads to a die orifice, from which the tubular film is extruded, said second annular passage is separated from the first annular passage by a tubular partition, which has a flow guiding surface which adjoins both annular passages, and the axial length of said tubular partition, measured from the upper boundary wall to the flow guiding surface, decreases from the inner end of the inlet to the diametrically opposite line of confluence of streams of molten material diverging from the inlet in such a manner that all flow paths for the molten material flowing from the inlet to the die orifice are substantially equal in length, characterized in that the film blowing head is formed with concentric axial passages for supplying and withdrawing inflating and cooling air and one or each of the inner and outer walls defining the second annular passage is formed between the line of confluence of the streams of molten material and the die orifice with coolant conducting bores, which are connected to coolant supply and withdrawing lines.

4,605,366

CALENDER FOR PRESSURE AND THERMAL TREATMENT OF MATERIAL WEBS

Rolf Lehmann, Rudolfstetten, and Alfred Christ, Zürich, both of Switzerland, assignors to Sulzer-Escher Wyss AG, Zürich, Switzerland

Filed Jan. 30, 1984, Ser. No. 575,010

Claims priority, application Switzerland, Feb. 10, 1983, 750/83

Int. Cl.[4] B29C *43/24*

U.S. Cl. 425—143 **11 Claims**

1. A calender for the pressure and thermal treatment of sheet material of plastic or textile or both, comprising:

at least one heated roll having two end faces and a circumferential region;

at least one counter roll cooperating with said at least one heated roll at a contact pressure region;

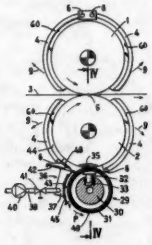
thermal insulating protective shields pivotally mounted at said circumferential region of said at least one heated roll to pivot away therefrom;

thermal insulating end seals disposed in proximity to said end faces of said at least one heated roll;

said at least one counter roll being a controlled deflection roll;

said controlled deflection roll comprising:

means for locally regulating a contact pressure force between the controlled deflection roll and said at least one heated roll; and



a substantially cylindrical roll shell of highly elastic material and of low thermal conductivity;

locally regulatable cooling means for cooling the surface of the controlled deflection roll; and

said cooling means being disposed on an outbound side of said controlled deflection roll in the vicinity of said contact pressure region.

4,605,367

MOLD CLOSING UNIT OF AN INJECTION MOLDING MACHINE

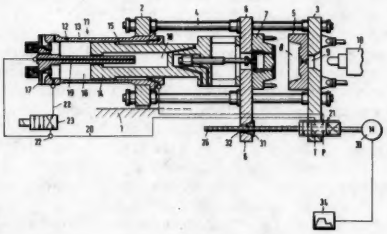
Lothar Gutjahr, Denzlingen, Fed. Rep. of Germany, assignor to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Aug. 1, 1984, Ser. No. 636,722

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3327936

Int. Cl.⁴ B29C *45/68*

U.S. Cl. 425—150 **1 Claim**



1. A mold closing unit of an injection molding machine which includes a stationary mold clamping plate and a movable mold clamping plate slidable along parallel guide rods relative to said stationary plate, a movable mold die affixed to said movable plate a mating fixed mold die affixed to said stationary plate and confronting said movable die so as to therewith define a mold cavity having a volume which is greater at the commencement of mold charging than at the termination of the mold charging, the unit comprising a fixed, hydraulic mold closure retention cylinder, and a hydraulic traveling cylinder including a piston operable within said retention cylinder and defining therewith on opposite sides of said piston first and second pressure chambers for respectively retracting and extending said piston, said piston being connected to said movable die, and said piston being hollow so as to define a third pressure chamber, means for operating said unit comprising a hydraulic supply passage leading to said first and third chambers for operating said piston; a linear amplifier having rigid hydraulically fixed feedback and comprising a 4/2-way valve arranged in said supply passage for axial movement to control the flow of hydraulic fluid through said passage for closing and opening said movable die, and elongated threaded rotatable spindle extending between said mold clamping plates, a spindle nut on said movable plate through which said spindle extends for threadedly engaging said spindle with said movable plate, a stepping motor connected with said spindle for rotation thereof, said valve having a valve body on said spindle for axial movement upon spindle rotation, said stepping motor being controllable depending on one of a specified speed and pressure pattern as a function of the distance between said movable fixed dies or between said mold clamping plates, whereby rotation of said spindle effects the movement of said 4/2-way valve to control the flow of hydraulic fluid, the movement of said movable die effecting an oppositely directed movement of said valve via said spindle which is counteracted by said motor, said hydraulic supply passage having a branch hydraulic supply line leading to said second pressure chamber, a multi-way valve in said branch line for opening the flow of hydraulic fluid through said branch line into said second chamber at a predetermined distance of said movable plate from said stationary plate until said movable die plate closes, whereby said multi-way valve permits a high holding force to be attained at said distance.

4,605,368

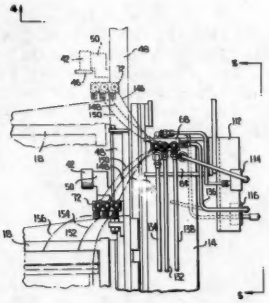
SWIVEL HOSE CONNECTION AND ADJUSTABLE MOUNTING OF SUPPORT MEMBER FOR CAM FOLLOWER AND SWIVELS

Ernest W. Hellmer, and Frank W. Pfohl, both of Chicago, Ill., assignors to Continental Plastic Containers, Stamford, Conn.

Filed Jun. 27, 1985, Ser. No. 749,214

Int. Cl.⁴ B29C *49/56*

U.S. Cl. 425—195 **14 Claims**



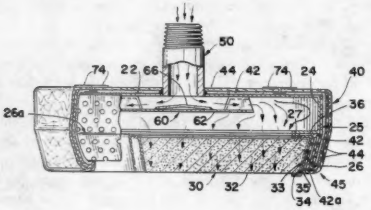
1. A fluid supply system for a blow molding apparatus of the rotary wheel type, said blow molding apparatus having a radially opening split mold assembly wherein a radially inner mold half carrier is radially fixed, and a radially outer mold half carrier is radially movable, a frame, means mounting said mold half carriers on said frame, a fluild line having a terminal mounted in a fixed position on said frame, said outer mold half carrier having a like fluid line terminal mounted thereon for radial movement therewith relative to said radially fixed terminal, a flexible fluid line connecting said fixed and radially movable terminals, said flexible fluid line including a swivel fitting at each of said terminals and a hose extending between said swivel fittings, said hose being of a length to be bowed in both radial extreme positions of said radially movable terminal with the bow being different at said radial extreme positions with said swivels permitting the change in said bow.

4,605,369

RADIANT BURNER

Arnold L. Buehl, Solon, Ohio, assignor to Slyman Manufacturing Corporation, Cleveland, Ohio

Division of Ser. No. 490,343, May 2, 1983. This application Oct. 12, 1984, Ser. No. 660,320
Int. Cl.[4] F23D *13/12*
U.S. Cl. 431—328 4 Claims



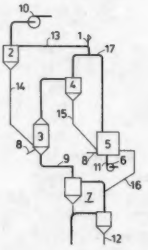
1. In a gas-fired radiant burner including a gas-permeable matrix of refractory fiber material having a generally equal degree of porosity throughout, the matrix having an inner face, an outer face, and a gas nonpermeable peripheral edge separating the faces, the burner further including a plenum means sealed against the periphery of the inner face of the matrix to supply a pressurized combustible gas thereto for burning at the outer face of the matrix, the burner further including a flexible blanket of thermal insulation material wrapped around the outside of the plenum means to thermally insulate the plenum means from high temperature gas byproducts generated by said burning, an edge portion of the blanket being biased against the edge of the matrix, the improvement wherein the blanket is comprised of an inner layer of nonwoven high-temperature-resistant fibers and an outer layer of woven material of high-temperature resistance, said woven outer layer being abrasion-resistant to protect said nonwoven inner layer.

4,605,370

METHOD AND APPARATUS FOR BURNING AWAY ORGANIC COMPONENTS IN RAW PHOSPHATE

Soren Hundebol, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Sep. 19, 1984, Ser. No. 652,329
Claims priority, application Denmark, Sep. 28, 1983, 4433/83
Int. Cl.[4] F27B *15/00*
U.S. Cl. 432—14 9 Claims



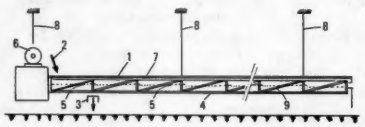
5. Apparatus for burning away organic components in phosphate raw material, said apparatus comprising first and second series-coupled reactors, said first reactor being a suspension transport reactor having top and bottom portions and including means for injecting phosphate raw material, from a source other than material treated in said second reactor, and a stream of combustion air into the bottom thereof and for suspending said material in said air and conveying said suspension upwardly through said reactor, said first reactor further including exit means for removing gas-entrained material from the top thereof, separator means for separating said gas-entrained material removed from said first reactor from said gas, means for passing substantially all of said material from said separator means to said second reactor, said second reactor being a suspension reactor and including means for injecting into said reactor combustion air and said material from said separator, and means for removing material treated in said second reactor.

4,605,371

APPARATUS FOR THE TRANSPORTATION AND HEATING OF GRANULATED MATERIALS

Georges Berrebi, Valence, France, assignor to Europeenne de Retraitement de Catalyseurs, La Voulte sur Rhone, France

Division of Ser. No. 567,722, Jan. 3, 1984, Pat. No. 4,551,437. This application Sep. 11, 1985, Ser. No. 774,837
Claims priority, application France, Mar. 15, 1983, 83004350
Int. Cl.[4] F27B *9/14*
U.S. Cl. 432—134 3 Claims



1. Apparatus for reactivating or regenerating solid catalyst particles used for the treatment or conversion of hydrocarbons, the apparatus comprising:

at least one elongate chamber having a longitudinal axis inclined with respect to a horizontal line at an angle of about 0°–5°; the chamber including an inlet zone, an outlet zone and a plurality of stepped floor plates having perforations therein wherein the floor plates are inclined with respect to the elongate chamber;

means for vibrating the elongate chamber in a direction substantially parallel to the longitudinal axis of the chamber at an amplitude to impart translational movement to the catalyst over the length of the chamber;

means for varying the speed of vibration to produce continuous mixing of the catalyst particles with the particles remaining in substantial contact with the floor plates whereby the particles slide along the floor plates and fall from upstream plates to adjacent downstream plates;

infrared heating means disposed in the elongate chamber for emitting infrared radiation in the range of about 0.75 μm to 1.5 mm wherein the particles are irradiated over the entire surfaces thereof as they drop from upstream plates to downstream plates, and

means for flowing gas through the bed of catalyst particles by passing gas through the perforations in the floor plates.

4,605,372

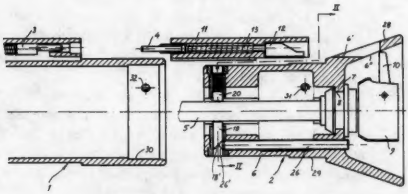
TRAINING MEANS FOR A WEAPON

Jan-Erik Nyzell, Eskilstuna, Sweden, assignor to Affarsverket FFV, Eskilstuna, Sweden

Filed Apr. 4, 1985, Ser. No. 720,287
Claims priority, application Sweden, Apr. 9, 1984, 8401963
Int. Cl.[4] F41F *27/00;* F41G *3/26*
U.S. Cl. 434—16 3 Claims

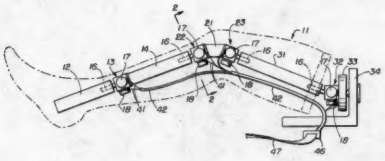
1. Training means for shooting with a weapon intended to be used with live ammunition, said training means comprising a sub-calibre barrel, which is attached inside a holder, which is capable of being placed inside the barrel of said weapon, said holder exhibiting a number of adjusting elements in contact with the sub-calibre barrel and capable of displacement in its transverse direction in order to provide zeroing of the sub-

calibre barrel, two of the adjusting elements are each operatively connected to an individual adjuster means, which extends essentially parallel with the sub-calibre barrel and at a



certain distance from it which shall be less than one half of the calibre of the barrel, and for a sufficient distance rearwards for its free end to be accessible inside a rear part of the holder, as seen in the shooting direction.

4,605,373
TRAINING DEVICE FOR SETTING BROKEN LIMBS
Bernard A. Rosen, 4246 Atlantic Ct., Santa Clara, Calif. 95054
Filed Jan. 10, 1985, Ser. No. 690,466
Int. Cl.[4] G09B *23/32*
U.S. Cl. 434—274 **6 Claims**



1. A training device for first aid handling of broken limbs comprising a flexible simulation of a limb having at least first and second substantially rigid, bone-simulating members embedded within said simulation in proximity to each other, a sensor fixed to the end of said first member nearest said second member, said sensor having a projection embedded in an end of said second member and a first and a second potentiometer at 90° angles with respect to each other capable of emitting an electric signal responsive to relative movement of said projection relative to said sensor in either of two directions, and an electric circuit including said first and second potentiometers and having means indicating to an observer that said potentiometers have been actuated by said projection.

4,605,374
DEMONSTRATOR FOR TEACHING PRESSURE BLOW FORMING OF PLASTICS
Karl J. Vinup, 1535 N. 26th St., Allentown, Pa. 18104
Filed Jul. 22, 1985, Ser. No. 757,510
Int. Cl.[4] G09B *25/02*
U.S. Cl. 434—365 **16 Claims**

1. A generally portable student teaching device to demonstrate pressure blow forming comprising:

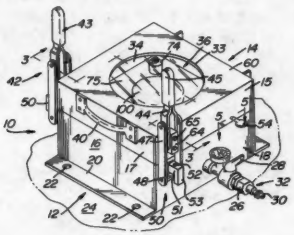
a. a generally parallelpipedal and sealable housing, said housing including a bottom, a lid including means to receive a mold, and four sides;

b. means to sealably lock said lid to said housing;

c. shelf supports located proximate said housing sides' interior upper edges;

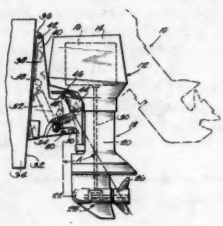
d. a generally horizontal planar shelf sized to span transversely the area defined by said four sides and rest on said supports, said shelf adapted to receive thereon plastic starting material, said shelf including an orifice to direct a jet of pressurized gas upward vertically through said shelf into said starting material; and,

e. means located on one of said sides to receive gas under pressure,



so that softened plastic starting material, when placed over said orifice on said shelf in said sealed housing, may be blown upward by pressurized gas to form thereby a workpiece.

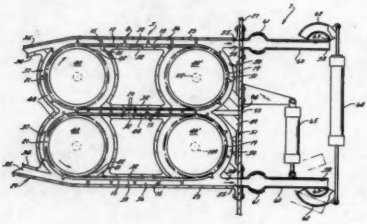
4,605,375
TRIM AND TILT CONTROL FOR MARINE PROPULSION DEVICES
Arthur R. Ferguson, Northbrook, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jan. 27, 1984, Ser. No. 574,582
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—1 **33 Claims**



16. A marine propulsion device comprising a transom bracket adapted to be connected to a boat transom, a propulsion assembly including a lower unit which carries a rotatably mounted propeller and which is submerged in water when said propulsion assembly is in an operating position, means connecting said propulsion assembly and said transom bracket to afford relative pivotal movement of said propulsion assembly in a generally vertical plane, hydraulic cylinder means for pivoting said propulsion assembly in said vertical plane through a range of trim positions from a fully down, operating position wherein said propeller is fully submerged in the water and also through a range of tilt positions angularly upwardly from the range of trim positions and including a fully raised, non-operating position, a hydraulic fluid system for actuating said hydraulic cylinder means including an electrically operated, reversible hydraulic pump which effects movement of said hydraulic cylinder means in a first direction to downwardly pivot said propulsion assembly in said vertical plane when pumping hydraulic fluid in one direction and which effects movement of said hydraulic cylinder means in a second direction to upwardly pivot said propulsion assembly in said vertical plane when pumping hydraulic fluid in the opposite direction, and electrical control means for selectively operating said pump so as cause downward pivotal movement of said propulsion assembly in said vertical plane from a tilt position to

a trim position when the thrust applied on said propulsion assembly exceeds a predetermined level.

4,605,376
MARINE JET PROPULSION UNIT
George R. Aschauer, 720 Florence Ave., Racine, Wis. 53402
Filed Jan. 18, 1985, Ser. No. 692,510
Int. Cl.[4] B63H *11/10*
U.S. Cl. 440—38 16 Claims



1. A reaction propulsion unit for installation in the interior of a marine craft hull, said unit comprising a housing having forward water intake means into which water can enter through the bottom of the hull, rearwardly discharging outlet means through which water can be discharged to the exterior of the hull, and driven impeller means in said housing whereby water entering said intake means is accelerated rearward and expelled through said outlet means to generate a propulsive reaction force, said propulsion unit being characterized by:

A. said impeller means comprising a blade carrier which moves in an orbit in one orbital direction,

(1) said blade carrier having thereon a plurality of blades

(a) which are spaced apart in said orbital direction and

(b) each of which has a front surface that faces in said orbital direction, and

(2) the orbit of said blade carrier having

(a) a driving portion in which the blades move rearward,

(b) an opposite return portion which is spaced from the driving portion and in which the blades move forward,

(c) a rear transition portion in which the blades move from said driving portion to said return portion, and

(d) a front transition portion in which the blades move from said return portion to said driving portion; and

B. said housing defining

(1) an acceleration channel in which the blade carrier has its driving portion and wherein water is accelerated rearward, said acceleration channel having wall portions extending therealong that lie closely adjacent to the edges of the blades,

(2) a return passage in which the blade carrier has its return portion,

(3) a front transition passage in which the blade carrier has its front transition portion and which has wall portions extending therealong that lie closely adjacent to the edge of the blades, said front transition passage having opposite ends that communicate, respectively, with a front end of said return passage and with a front end of said acceleration channel,

(4) a rear transition passage in which the blade carrier has its rear transition portion and which has wall portions extending therealong that lie closely adjacent to the edges of the blades, said front transition passage having opposite ends that communicate, respectively, with the rear ends of the acceleration channel and of the return passage,

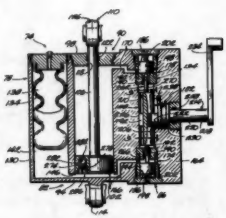
(5) substantially rearwardly extending passages communicating

(a) said intake means with the front end of said acceleration channel and

(b) the rear end of said acceleration channel with said outlet means and cooperating with said acceleration channel to provide an unobstructed path in which water is confined and along which it flows without abrupt acceleration substantially consistently and undivertedly rearwardly from said intake means to said outlet means, and

(6) an air inlet passage having an opening to the atmosphere and which is communicated with a rear portion of said return passage to mix air with water in the return passage and thus maintain water in said acceleration channel substantially at a static pressure near that of the atmosphere and prevent cavitation therein.

4,605,377
MANUAL LIFT MEANS FOR MARINE PROPULSION DEVICE
Thomas D. Wenstadt, Winthrop Harbor, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jun. 21, 1984, Ser. No. 622,885
Int. Cl.[4] B63H *5/12*
U.S. Cl. 440—61 14 Claims



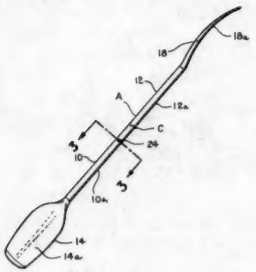
1. A marine propulsion device comprising a support bracket adapted to be attached to a boat hull, a propulsion unit, means connecting said propulsion unit and said support bracket for tilting movement of said propulsion unit in a vertical plane about a horizontal transverse axis between an operating position and a raised nonoperating position, extendable and retractable cylinder-piston means for facilitating manual tilting movement of said propulsion unit upwardly about said axis when said support bracket is attached to a boat hull, said cylinder-piston means comprising a cylinder including a first end and a second end, a piston located in said cylinder for reciprocative movement therein, a piston rod connected to said piston and extending from said second end of said cylinder, means connecting said cylinder-piston means to said support bracket and said propulsion unit for extending said cylinder-piston means in response to upward tilting movement of said propulsion unit, and for retracting said cylinder-piston means in response to downward tilting movement of said propulsion unit, said connecting means comprising means pivotally connecting said first end of said cylinder to one of said support bracket and said propulsion unit, and means pivotally connecting said piston rod to the other of said support bracket and said propulsion unit, a predetermined quantity of incompressible fluid partially filling said cylinder, a gas with a pressure higher than atmospheric pressure filling the remainder of said cylinder, a single conduit communicating solely with said first end and said second end of said cylinder, and manually operable valve means in said conduit for selectively preventing fluid flow between said first end and said second end of said cylinder.

4,605,378

BREAKDOWN BOAT PADDLE WITH VARIABLE CONFIGURATION

Don A. Hamilton, P.O. Box 1727, Easley, S.C. 29641

Filed Dec. 20, 1984, Ser. No. 684,374
Int. Cl.[4] B63H *16/04*
U.S. Cl. 440—102 **20 Claims**



1. A breakdown boat paddle for a kayak and the like comprising:
- a first section having a paddle blade carried on one end and a jointed end formed on the opposing end with a handle portion in between;
- a second elongated section having a paddle blade carried on one end and a jointed end formed on the other end with a handle portion in between;
- a joint formed between the jointed ends of said first and second sections when fitted together to make a double-bladed boat paddle;
- a sleeve carried by the jointed end of said second section receivable in the jointed end of said first section;
- a lock means carried by said sleeve of said second section;
- locking means carried by said first section for engaging with said lock means in a number of predetermined operational positions of operational paddle blade orientations in a manner that said paddle may be configured for righthand or lefthand control operation;
- said lock means and locking means interlocking in such a manner that said first and second sections are fixed against axial and rotational movement in relation to one another;
- torque resisting means formed on the jointed ends of said first and second sections which positively prevents rotation between said first and second sections and removes torque stresses from said lock means and locking means when interlocked with each other to prevent failure thereof.

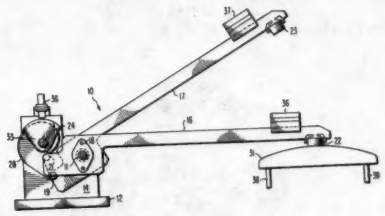
4,605,379

KINESCOPE PANEL/MASK FRAME ASSEMBLY THUMPER AND FLUSH DEVICE AND METHOD

Donald J. Shahan, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 27, 1985, Ser. No. 769,977
Int. Cl.[4] H01J *9/20*
U.S. Cl. 445—59 **11 Claims**

1. A device for dislodging potentially aperture blocking particles from a kinescope panel/mask frame assembly comprising:
- a fixed shaft;
- at least one thumper arm pivotably supported by said fixed shaft, one end of said arm having a cam follower, and the other end of said arm having a faceplate thumper;
- a rotatable shaft arranged substantially parallel to said fixed shaft;
- at least one cam fixed to said rotatable shaft for rotation with said shaft, said cam having a curved surface for engaging said cam follower and raising said faceplate thumper above a faceplate panel located in the proximity of said thumper, and said cam having an inset portion for disengaging said cam follower whereby said arm pivots downwardly and said thumper impacts said faceplate panel;
- means for rotating said rotatable shaft;



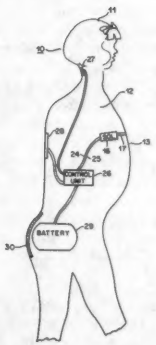
- means for supporting a faceplate panel in the proximity of said thumpers; and
- means for blowing charged fluid across said panel/mask frame assembly while said thumper impacts said panel.

4,605,380

HEARTBEAT DOLL

Samuel A. Camm, 966 Ponus Ridge Rd., New Canaan, Conn. 06840, and Malcolm E. Bryant, Easton, Conn., assignors to Samuel A. Camm, New Cannan, Conn.

Filed Mar. 13, 1985, Ser. No. 711,371
Int. Cl.[4] A63H *33/00, 3/00*
U.S. Cl. 446—14 **6 Claims**



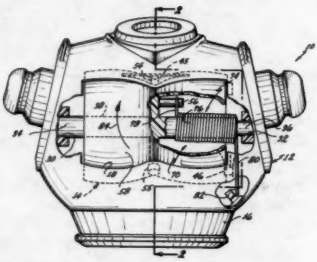
1. A heartbeat doll having an internal cavity adjacent an inner chest wall of the doll, said doll comprising:
- solenoid means disposed within said cavity, said solenoid means comprising a solenoid having a plunger for repetitively impacting said inner chest wall when the solenoid is repetitively actuated;
- spring means for biasing said plunger in a given position with respect to said inner chest wall when said solenoid is not actuated;
- pulse generator means disposed within said doll for repetitively actuating said solenoid; and
- means comprising a temperature sensor mounted on a surface portion of said doll for varying the pulse repetition rate of said pulse generator means.

4,605,381

ANIMATED FIGURE TOY HAVING A UNITARY, MULTIPLE-FUNCTION SPRING

Ronald H. MacBain, Los Angeles, and Tony Rhodes, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 29, 1983, Ser. No. 566,742
Int. Cl.[4] A63H *3/12*
U.S. Cl. 446—321 **1 Claim**



1. In combination with an animated toy having a body including an upper torso with a predetermined opening formed therein, a rotatable chest drum positioned adjacent to said opening within said body, said drum having at least first and second sections, said first section representing one appearance and said second section representing another appearance, said rotatable chest drum including an axle rotatably mounting said drum in slots in said body, spring means including a coiled spring encompassing said axle and having a short leg portion bearing against a stop adjacent said axle and a long leg portion bearing against said body for biasing said rotatable chest drum into engagement with latch means, said latch means for positioning said first and second sections in first and second positions, said latch means including at least two stop members positioned at predetermined locations on said chest drum and a stop member on said body, said first section being exposed through said opening and said second section being concealed inside said body while in said first position, said first and second sections capable of moving from said first position to said second position due to and after impact of a force upon said chest drum which causes said axle to be displaced releasing said latch means and causing said chest drum to rotate about a longitudinal axis due to action of said coiled spring until said first and second sections are positioned in said second position by said latch means, said first section being concealed inside said body and said second section being exposed through said opening while in said second position.

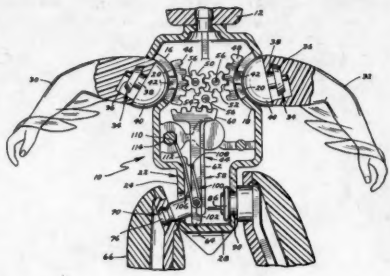
4,605,382

FIGURE WHEREIN LEG MOVEMENT PRODUCES WING-LIKE MOVEMENT OF ARMS

Stuart A. Cook, New Richmond; Phillip G. Reed, Loveland, and Michael C. Scarpa, Cincinnati, all of Ohio, assignors to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 8, 1985, Ser. No. 699,618
Int. Cl.[4] A63H *3/20*
U.S. Cl. 446—330 **15 Claims**

8. A toy action figure comprising a hollow torso, a pair of limbs constituting a pair of arms, means pivotably mounting said arms to said torso for wing-like movement relative to said torso, a third limb constituting a leg, means mounting said leg to said torso for rocking movement relative to said torso and means within said torso for moving said arms simultaneously upward as a result of rocking said third limb in one direction and simultaneously downward as a result of rocking said third limb in the other direction to produce said wing-like movement, said means within said torso comprising a plurality of gear members interconnecting said leg with said arms, said gear members including a respective arcuate gear rack fixed to



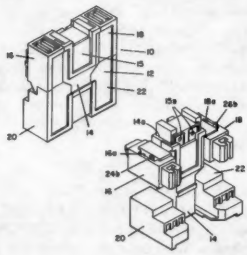
the torso end of each of said limbs and at least one additional gear element rotatably mounted within said torso.

4,605,383

TOY BLOCK TRANSFORMED INTO A ROBOT

Shigeyuki Horiuchi, Tokyo, Japan, assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 22, 1985, Ser. No. 757,415
Claims priority, application Japan, Dec. 29, 1984, 59-279135
Int. Cl.[4] A63H *3/46*
U.S. Cl. 446—376 **5 Claims**



1. In a toy block capable of being transformed into another form, the combination comprising:

a main body member having a hollow portion therein;

a pair of shoulder members pivotally coupled to said main body member;

a pair of leg members pivotally coupled to said main body member; and

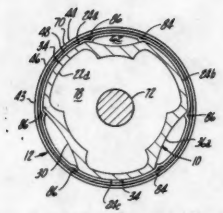
a head member slidably coupled to said main body member for being received within said hollow portion thereof, said shoulder members and said leg members when pivoted to a first position with respect to said main body member provide a contiguous surface having embossed thereon an alphanumeric symbol viewable only with said shoulder members and said leg members in said first position.

4,605,384

SELF-ALIGNING TRIPOD JOINT TULIP COVER AND CONSTANT VELOCITY JOINT INCORPORATING SAME

Patrick L. Kurzeja, Comber, Canada; Noel W. Sutton, Northville, Mich., and Steven C. Hahn, Mt. Clemens, both of Mich., assignors to GKN Automotive Components Incorporated, Southfield, Mich.

Filed Mar. 14, 1984, Ser. No. 589,994
Int. Cl.[4] F16D 3/30
U.S. Cl. 464—111 24 Claims



1. A self-aligning tulip cover for interconnecting and aligning a spider assembly, an irregularly shaped, noncircular tulip body, and a boot; said irregularly shaped, non-circular tulip body having an open cavity formed therein, an irregularly shaped, non-circular outer circumferential surface disposed about said open cavity, and a flat annular surface extending between said irregularly shaped, non-circular outer circumferential surface and said open cavity; said spider assembly having a portion selectively insertable in said open cavity; said boot further having an inner surface with a cylindrical end portion; said self-aligning tulip cover further comprising:

first flange means selectively engageable with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body;

interconnection means selectively interconnecting said first flange means with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body;

second flange means extending in a direction away from said first flange means, said second flange means in sealing engagement with said cylindrical end portion of said inner surface of said boot; and

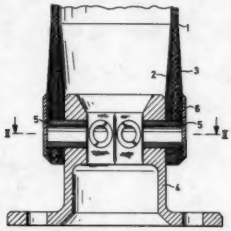
radially extending flange means interposed said first and second flange means, said radially extending flange means extending radially and being engageable with said flat annular surface of said irregularly shaped, non-circular tulip body, such as to form a seal therebetween when said first flange means is interconnected with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body by said interconnection means, said radially extending flange means further being selectively engageable with said spider assembly, such as to retain said spider assembly in a preselected aligned orientation in said open cavity when said first flange means is interconnected with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body by said interconnection means.

4,605,385

FIBRE REINFORCED PLASTICS POWER TRANSMISSION SHAFT

Alfred Pück, Basel, and Peter Voirol, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 70,188, Aug. 26, 1979, abandoned. This application Dec. 24, 1984, Ser. No. 685,202
Claims priority, application Switzerland, Sep. 7, 1978, 9409/78; Sep. 12, 1978, 9542/78; Sep. 12, 1978, 9546/78; May 10, 1979, 4373/79
The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.
Int. Cl.[4] F16D 3/26
U.S. Cl. 464—181 20 Claims



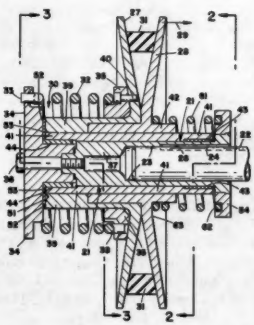
1. A power transmission shaft, comprising a tube of carbon fibre reinforced plastics, fittings secured to its two ends and at each end of the tube a wall reinforcement of carbon fibre reinforced plastics tapering substantially gradually towards the middle of the tube, the wall reinforcement fibre structure being similar to that of the tube so that the tube and the wall reinforcements have at least approximately the same anisotropic behaviour, and radial bolts located in the region of the wall reinforcements securing said fittings to said tube.

4,605,386

COMPACT VARIABLE SPEED PULLEY ASSEMBLY

Gerald R. Harris, P.O. Box 1148, Pryor, Okla. 74361

Filed Aug. 19, 1985, Ser. No. 766,646
Int. Cl.[4] F16H 55/56
U.S. Cl. 474—8 14 Claims



1. A compact variable speed pulley assembly including pulley shaft means, a pair of pulley faces mounted for angular displacement relative to said shaft means, at least one of said pulley faces being axially displaceable along said shaft means toward a remainder of said pulley faces, and spring biasing means mounted to bias said pulley faces toward each other and coupled to transmit torque between one of said pulley faces

and said shaft means, wherein the improvement in said pulley assembly comprises:

motion damping means mounted to said pulley assembly and formed and coupled to apply a damping force resisting relative angular displacement between said shaft means and at least one of said pulley faces.

4,605,387

TENSIONER

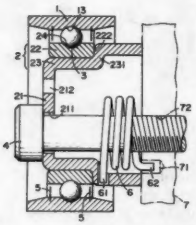
Kenji Okubo, Tokyo; Yasuaki Kuroki, Chigasaki, and Takashi Horikawa, Hiroshima, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 207,968, Nov. 18, 1980, abandoned. This application Apr. 18, 1985, Ser. No. 724,484

Claims priority, application Japan, Nov. 21, 1979, 54-160426[U]

Int. Cl.⁴ F16H *7/12, 7/10*

U.S. Cl. 474—112 **8 Claims**



1. A tensioner for imparting a desired tension to a belt, comprising a cylindrical inner member fixed to a support, said inner member having a race member with an outer track, a rotatable outer member engaged with said belt, and rolling members disposed between said outer track and said outer member, the improvement comprising:

said inner member having a wall portion spaced from said support and having therein an aperture located eccentrically with respect to the axis of said inner member;

biasing means including a resilient member disposed within said inner member and having at least one end restrained by said inner member and the other end restrained by the support, said resilient member including a portion extending outwardly from said inner member and holding said race member against axial movement; and

means including a single bolt threaded within said support to extend through said aperture for supporting said inner member so that it may rotate eccentrically about said bolt until the moment applied by said belt corresponds to the opposite moment applied by said resilient member, whereupon said bolt can be tightened to said support to fix the inner member in place.

4,605,388

SHEET METAL PULLEY FOR TOOTHED BELTS AND MANUFACTURING PROCESS THEREOF

Satoshi Nagano, and Masanori Sakai, both of Osaka, Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan

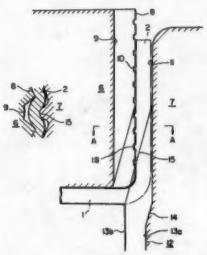
Filed Jun. 6, 1985, Ser. No. 742,184

Claims priority, application Japan, Jun. 12, 1984, 59-119088

Int. Cl.⁴ F16H *55/17*

U.S. Cl. 474—152 **8 Claims**

5. The method of manufacturing a pulley made of sheet metal for use with toothed belts comprising the steps of providing a sheet-metal cup-shaped body which has a generally circular base with a circumferential flange section to form belt engaging teeth, said body having a solid lubrication film thereon, cold-forging the pulley in a single operation by means of a punch which has radially-outward facing convex sections and concave sections of a configuration matching the desired inner face shape of said teeth, said punch having a plurality of circumferential grooves cut into at least one of said sections and a die with an upper cylindrical section having an inside diameter to receive said circumferential flange of the cup-shaped body and a lower die section in which concave sections and convex sections are formed with a first clearance gap relative to said convex and concave sections of the punch, said first clearance gap being smaller than the wall thickness of the sheet metal circumferential flange of the body, the clearance gap between said die section and the base of said circumferential grooves being greater than the first clearance gap, and a tapered inclined face between the upper cylindrical wall section and said die section; said method including the step of inserting said punch into said body in the cylindrical section of the die and displacing it into said die section to forge the circumferential flange to form pulley teeth with a plurality of reinforcing crosspiece ribs disposed circumferentially and projecting inwardly from the inner surface of said circumferential flange by the pressure exerted radially upon said circumferential flange when said circumferential flange passes said tapered inclined face.



4,605,389

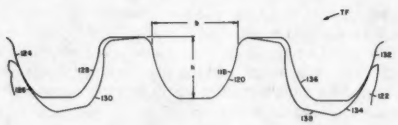
TOOTHED BELT AND SPROCKET

William L. Westhoff, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 22, 1985, Ser. No. 726,254

Int. Cl.⁴ F16H *7/02*

U.S. Cl. 474—153 **8 Claims**



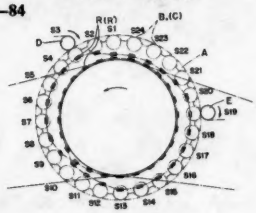
1. In a toothed power transmission belt of the type formed with an elastomer, reinforced with a tensile member that defines a pitch line, and teeth that when viewed in longitudinal section each have a base width b, a height h, a pitch spacing P and oppositely facing flank surfaces that change at roots into land surfaces and also change into a tooth tip, wherein the improvement comprises:

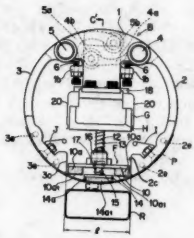
each belt tooth having a major portion of each flank surface shaped in longitudinal section as substantially a tractrix curve.

4,605,390
PACKING CONTAINER FORMING APPARATUS

Tomizou Nagata; Yoshiyuki Mutoh; Kouzou Sakakibara, and Norikuni Miyaoka, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 648,839
Claims priority, application Japan, Sep. 13, 1983, 58-167586
Int. Cl.[4] F16H *7/00*
U.S. Cl. 493—84 **9 Claims**





1. In a packing container forming apparatus in a packing machine including a rotary packing drum, means cooperating with said drum for feeding a first sheet material to said drum, means cooperating with said drum for feeding a second sheet material to said drum, a plurality of arbors comprising hollow rectangular sleeves mounted on said drum, a plurality of packing container forming means cooperating with said arbors for forming double bags of first and second sheet materials by winding said sheet materials around each of said arbors and closing one end thereof, the improvement comprising:

a plurality of arbors arranged in first and second rotary rows on one rotary packing drum with said arbors being oriented with their longitudinal axes parallel to the rotary axis of said drum and with said arbors of the respective rows being arranged in tandem in the axial direction of said drum;

means cooperating with said arbors in said first rotary row for forming a bag of first sheet material with one of its ends closed by winding a sheet of said first sheet material around each said arbor;

means cooperating with said arbors in said second rotary row for forming a bag of second sheet material with one of its ends closed upon said bag of first sheet material by winding a sheet of said second sheet material around each said arbor; and,

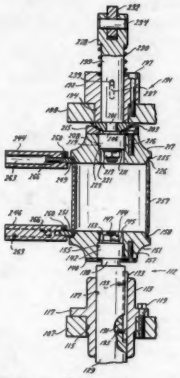
means on said drum for consecutively shifting said arbors between said rotary rows by movement of said arbors along their longitudinal axes in paths parallel to the rotary axis of said drum.

4,605,391
APPARATUS FOR FLANGING CAN ENDS

Ronald Cook, Marquand, Mo., assignor to Tools & Machinery Builders, Inc., Arcadia, Mo.

Filed Mar. 28, 1985, Ser. No. 716,839
Int. Cl.[4] B31B *1/13*
U.S. Cl. 493—159 **21 Claims**

1. In a flanging machine for flanging the ends of cans such as fiberboard cans, the combination of: a base, a can support on the base, means on the base for making a preliminary flange on at least one end of the can and mechanism for compressing a material of said preliminary flange, said last named mechanism comprising means for rotatably mounting the can support on the base, means for translating the can on the can support in a fixed path, a fixed compression rail adjacent said path and



opposite the preliminary flange, the compression rail having means thereon to engage the said preliminary flange portion of the can as the can is translated along its path, said means compressing the material of the can, the can being adapted to roll against the rail and thereby compress the entire circumference of the can.

4,605,392
APPARATUS FOR MAKING PLASTIC CARRIER BAGS

Fritz Achelpohl; Friedhelm Mundus, both of Lengerich, and Wilfried Ebmeyer, Enger, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Oct. 2, 1984, Ser. No. 656,999
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336231
Int. Cl.[4] B31B *23/86;* B26D *1/06*
U.S. Cl. 493—196 **12 Claims**

1. Apparatus for making plastic carrier bags of a preselected width from a tubular web of plastic film material, comprising:

feeding means for intermittently feeding the tubular web along a path in successive steps each corresponding to the width of the bags to be made;

cutting means along said path for cutting the tubular web at a central region thereof into half tubular webs along an undulating sinusoidal curve to form undulations having peaks and troughs in adjacent edges of the half tubular webs, said cutting means including a cutting member;

a carriage mounted for movement transversely to the feeding direction of the tubular web, said cutting member of said cutting means being pivotably mounted on said carriage for pivoting movement about an axis perpendicular to a plane of the tubular web;

first lever means for reciprocating said carriage transversely of the direction of advancement of the tubular web in synchronism with the intermittent feeding of the tubular web by said feeding means, such that said cutting member cuts the tubular web along the undulating sinusoidal curve, said first lever means being pivotably mounted adjacent one end and being pivotably connected adjacent an opposite end to said carriage;

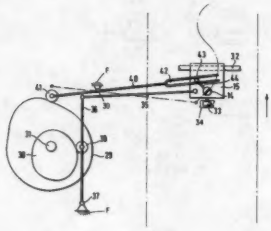
means comprising a first continuously driven control cam engaged with said first lever means for oscillating said first lever means to cause reciprocation of said carriage in said synchronism;

second lever means for pivoting said cutting member in synchronism with the reciprocation of said carriage by said first lever means and the intermittent feeding of the tubular web by said feeding means, so as to maintain said

cutting member substantially tangential to the undulating curve at the cutting point of the undulating curve, said second lever means being pivotably mounted and having one end connected to said pivotably mounted cutting member;

means comprising a second continuously driven control cam engaged with said second lever means for pivoting said second lever means and thereby pivoting said cutting member in said synchronism;

diverting means along said path for displacing the half tubular webs longitudinally relative to each other by half the



width of the bags such that respective ones of the peaks and troughs of the half tubular webs are in an aligned opposed mirror image relationship to each other; and

transverse welding and cutting means along said path for simultaneously welding and cutting the half tubular webs centrally through respective ones of the troughs of the half tubular webs which are in aligned opposed mirror image relationship to each other, to form the plastic tubular carrier bags.

4,605,393

CARTON BLANK REMOVAL, ERECTION AND TRANSFER APPARATUS

Eberhard Krieger, Weinstadt, and Theo Moser, Steinenberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 695,111

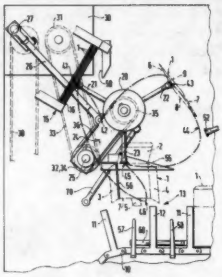
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413232

Int. Cl.[4] B31B *3/80*

U.S. Cl. 493—317 **7 Claims**

1. An apparatus for removing carton blanks, erecting and transferring cartons which comprises:

means comprising a conveyor apparatus, for moving said cartons in a conveying direction, a magazine disposed forward of and above one end of said conveyor, a rotor which is disposed between said magazine and a transfer station of said conveyor apparatus, means operatively connected to said rotor for rotating said rotor in increments of a predetermined angle, said rotor having means comprising three equally spaced suction units disposed on said rotor in a radially offstanding fashion for grasping a second wall of said carton blank, means comprising a valve device for connecting each of said three suction units intermittently to a source of negative pressure, said rotor being supported on an arm, said arm being pivotable about a shaft disposed in an area between a carton blank removal end of the magazine and the transfer station of said conveyor apparatus, means operatively connected to said arm for pivoting said arm and said rotor away from said magazine substantially during an interval between rotations of said rotor, means comprising a counterpart suction device disposed in a vicinity of the transfer station for temporarily grasping a first wall of a partially open carton located opposite said second wall grasped by a suction unit of said rotor, said rotating means and said pivoting means being synchronized so that in the vicinity of the transfer station the rotor has a rotational movement contrary to the conveying direction of the conveyor appa-



ratus, which moves in a direction away from the magazine.

4,605,394

METHODS FOR THE TREATMENT OF PATHOLOGICAL CONDITIONS BY REMOVING INTERFERON FROM THE ORGANISM

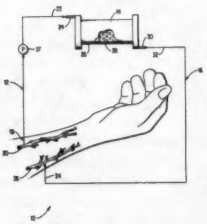
Simon V. Skurkovich, 261 Congressional La., #709, Rockville, Md. 20852, assignor to Simon V. Skurkovich, Rockville, Md.

Filed Dec. 3, 1982, Ser. No. 446,680

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.[4] A61M *37/00*

U.S. Cl. 604—4 **2 Claims**



1. In a method of treating diseases comprising the step of selectively clearing the blood of a patient from interferon using an apparatus having, in continuous fluid communication, an inlet tube, absorbing means for absorbing and thereby removing interferon from the whole blood, and an outlet tube, said method comprising:

connecting the inlet tube of said apparatus to a blood vessel of a patient and connecting the outlet tube of said apparatus to a vein of the patient;

removing blood from the blood vessel of the patient;

passing the removed blood through the absorbing means for absorbing interferon to thereby reduce the amount of interferon in the blood; and

returning the blood to the vein of the patient,

the improvement comprising:

administering normal interferon after completion of the clearance of interferon process and returning the blood containing normal interferon to the patient.

4,605,395

HYDROCEPHALY TREATMENT DEVICE INCLUDING A VARIABLE IMPEDANCE FILTER

Christian Sainte Rose, and Jacques Lacombe, both of Paris, France, assignors to Universite Rene Descartes (Paris V), Paris, France

Filed Jan. 13, 1984, Ser. No. 570,686

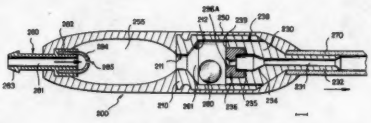
Claims priority, application France, Jan. 14, 1983, 83 00546

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—9 **12 Claims**

1. A hydrocephaly treatment device comprising an intracra-

nial catheter connected to a tube fitted with a first valve for diverting the flow of cephalo-rachidian liquid to one or more cavities in the organism capable of absorbing said liquid, the improvement wherein a hydraulic filter of non-linear variable impedance is connected in said tube in series with said valve, said filter comprising at least one bead and one outlet orifice for the cephalo-rachidian liquid, said outlet orifice substantially cooperating with said at least one bead to form a seat of



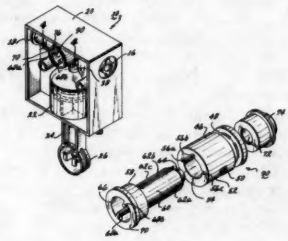
a leakage rate valve the leakage rate of which varies as a function of pressure, said filter maintaining an average flow rate of the cephalo-rachidian liquid defined by said leakage rate close to the physiological flow rate, thereby permitting the intracranial pressure to vary in the short term over a characteristic period of about one second, while preventing said pressure from varying in the long term over a characteristic period of about one minute.

4,605,396

GRAVITY FLOW CASSETTE WITH ROTARY VALVE

Gus G. Tseo, San Diego, and Dennis L. Fitzwater, Murrieta, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 25, 1985, Ser. No. 704,803
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—32 **17 Claims**



1. A disposable cassette used with an I.V. infusion pump which comprises:

a pump chamber having a fluid inlet and a fluid outlet; and

a valve body formed with a first fluid pathway and a separate second fluid pathway, said valve body normally disposed in said cassette for operative association with the pump chamber to alternatingly establish fluid communication through said first pathway from said inlet to said pump chamber and from said pump chamber to said outlet,

said valve body means being movable longitudinally and axially in said cassette when said cassette is removed from the pump to establish fluid communication through said second fluid pathway simultaneously between said inlet, said outlet and said pump chamber.

4,605,397

APPARATUS FOR SUPPORTING AND MANAGING A MEDICAL PIG TAIL TYPE FLUID INFUSION DEVICE

Kathy D. Ligon, and Marcia J. Hoovler, both of 6741 A-1 Six Forks Rd., Raleigh, N.C. 27609

Filed Jan. 23, 1985, Ser. No. 694,019
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—179 **6 Claims**

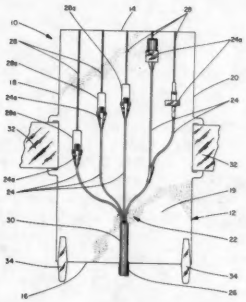
1. A medical infusion management board for receiving and holding a fluid infusion line assembly having a main feed line and a plurality of pig tails that branch and extend therefrom and which are operative to connect to a series of different fluid sources for channeling the respective fluids into said main feed line and on into said patient, said medical infusion management board comprising:

A. a board type support structure having an upper surface and opposed first and second ends;

B. main channel means formed in the upper surface of said board type support structure for receiving and holding said main feed line of said pig tail type fluid infusion line assembly;

C. said main channel means comprising a channel formed in the upper surface of said board type support structure and extending from a first end of said board type support structure to an intermediate area thereof;

D. pig tail channel means formed in the upper surface of said board type support structure for receiving and holding said pig tails of said fluid infusion line assembly for main-



taining the pig tails in spaced apart relationship about said board type support structure;

E. said pig tail channel means including a plurality of separate, distinct and laterally spaced pig tail receiving channels formed across said board type support structure about the upper surface thereof with the respective pig tail channels extending in spaced apart relationship from said second end towards the intermediate area of said board type support structure and wherein said pig tail channels come together and merge with said main channel at the intermediate area of said board type support structure; and

F. means for engaging and retaining said main feed line and said pig tails within the respective channels formed in said board type support structure such that said pig tails are maintained in spaced apart relationship in order that they may be freely and conveniently spaced and discussed to various inputs.

4,605,398

DISPENSING DEVICE FOR CONTAINER HAVING FLUID TO BE CONTROLLABLY DISPENSED INTO AN EYE

Robert S. Herrick, 4134 N. Rosemead Blvd., Rosemead, Calif. 91770

Filed Apr. 20, 1984, Ser. No. 602,358
Int. Cl.[4] A61N *1/00*
U.S. Cl. 604—300 **22 Claims**

1. A dispensing device adapted to be attached to a container having a fluid-dispensing opening through which fluid is to be controllably dispensed into an eye of a user comprising

attaching means adapted to be operatively coupled to the exterior of a said container and positioned with said fluid-dispensing opening extending in a predetermined direction therefrom; and

support guide means including means defining a first end which is operatively coupled to said attaching means and a second opposed eyelid everting end which is located in said predetermined direction and which extends beyond the fluid-dispensing opening, said second opposed eyelid everting end terminating in a curvilinear, blade-like evert-

ing member having an outer ribbed edge eye socket bone engaging member having two ribs, one of which is higher than the other, and which is adapted to be positioned against the outer skin and below the lower eyelid and over a portion of the bone structure defining the eye socket of a user wherein the outer ribbed edge is capable of being urged against the bone structure with the skin therebetween to produce movement of the skin relative to the eye

socket bone engaging member to evert the lower eyelid when said engaging member is positioned with the higher rib away from the eye and against the eye socket bone, said eyelid everting member urging the skin in a downward direction from the eye which everts the lower eyelid from the eye of a user, enabling drops of fluid to be directed into the eye in the absence of interference from the lower eyelid.

4,605,399

TRANSDERMAL INFUSION DEVICE

Robert E. Weston, Exeter, N.H., and Robert R. Hunter, III, Westboro, Mass., assignors to Complex, Inc., Hampton, N.H.

Filed Dec. 4, 1984, Ser. No. 677,799

Int. Cl.[4] A61M *7/00*

U.S. Cl. 604—305 **3 Claims**

1. Transdermal infusion device, comprising:

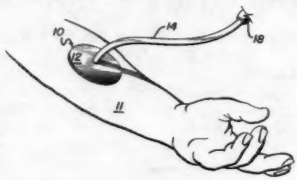
(a) an impervious main sheet formed of a foamed polymer plastic,

(b) a manifold sheet attached to one side of the main sheet and providing a passage complex in the form of a screen made up of strands of a polymer plastic,

(c) a flexible fluid delivery tube extending through the main sheet and into the passage complex of the manifold sheet,

(d) a porous sheet formed of gauze attached to and coextensive with the manifold sheet and adapted to lie against a human skin to release fluid thereto,

(e) an annular adhesive layer in a peripheral area provided on the said one side of the main sheet and completely



surrounding both the manifold sheet and the porous sheet, and

(f) a release sheet overlying the adhesive peripheral area of the main sheet, as well as the porous sheet and the manifold sheet.

4,605,400

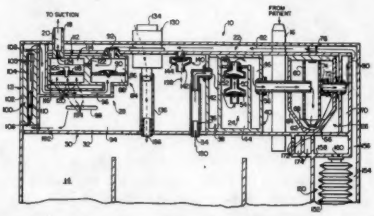
SURGICAL DRAINAGE APPARATUS

Leonard D. Kurtz, Woodmere, and Joseph M. LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed May 4, 1984, Ser. No. 606,968

Int. Cl.[4] A61M *1/00*

U.S. Cl. 604—319 **42 Claims**



29. A surgical pleural drainage device for draining fluids from the body of a patient comprising:

a container,

a collection chamber for fluids formed in said container,

a fluid inlet extending from outside said container into the upper end of said collection chamber to provide an unobstructed passageway for the free flow of both liquids and gases from the body of a patient into the collection chamber,

connection means for connecting said collection chamber to a source of negative pressure to create a negative pressure within said collection chamber and thereby draw fluids into said collection chamber through said fluid inlet, said connection means including a suction outlet mounted on said container to which the source of negative pressure is applied and a passageway disposed adjacent the upper end of the container connecting said suction outlet and said collection chamber,

one way resiliently operated valve means provided in said fluid passageway for allowing gases to flow from said collection chamber to said suction outlet and preventing reverse flow of gases from said suction outlet to said collection chamber,

trap means for preventing liquid from said collection chamber from passing through said one way valve means,

control means provided in said passageway for controlling the amount of negative pressure applied to said collection chamber relative to the negative pressure applied at said suction outlet,

an air leak indicating means provided in said passageway for indicating the flow of gases through said passageway including a visible liquid trap through which the gases flow and therein form bubbles, which bubbles serve as visible indicators of flow, and

an excess negative pressure relief means for relieving excess negative pressure in said collection chamber which cannot relieve the negative pressure down to atmospheric pressure.

4,605,401

MATERIAL FOR THE ABSORPTION OF WATER, AQUEOUS SOLUTIONS AND AQUEOUS BODY FLUIDS

Miroslav Chmelir, and Alois Künschner, both of Krefeld, Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 434,218, Oct. 14, 1982, abandoned.

This application May 25, 1984, Ser. No. 614,353

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141098

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—368 **12 Claims**

1. A process for producing an absorption material compris-

ing applying directly to a cellulosic fibrous support a suspension in a liquid of a water-insoluble cross-linked absorbent polymer or copolymer of acrylic, methacryclic or acrylamidomethylpropanesulfonic acid or of a salt thereof, or of acrylic amide or methacrylic amide with one another or with at least one of vinylpyrrolidone and vinyl acetate, and drying to remove the liquid so as to leave the absorbent directly on the support.

4,605,402

SOFTENING OF A COMPOSITE ABSORBENT PRODUCT

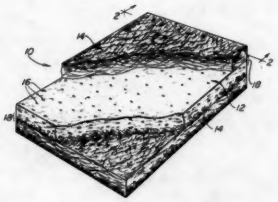
Michael J. Iskra, Flemington, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Aug. 17, 1984, Ser. No. 641,549

The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—368 **10 Claims**



1. A microcorrugated, perf-embossed, absorbent composite structure comprising an absorbing layer comprised of a fibrous web having an initial dry bulk of at least about 20 cc/gm., a dry bulk recovery of at least about 30 percent, a wet bulk of at least about 30 cc/gm., and a weight less than about 4 oz/sq. yd., and containing at least about 200 percent superabsorbent and a wicking layer, said structure having a Taber stiffness value less than about 25.

4,605,403

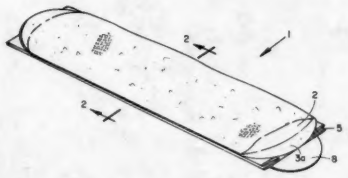
SANITARY NAPKIN DISPOSAL SYSTEM

J. Camille Tucker, San Antonio, Tex., assignor to Dalal Hibril, San Antonio, Tex.

Filed Apr. 8, 1985, Ser. No. 720,698

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385 R



1. A sanitary napkin comprising an absorbent pad; a liquid impermeable sheet secured to one face of said pad; a perforated wrapper surrounding all portions of said pad and said impermeable sheet; said perforated wrapper having a slit-like opening extending transversely across one end of said napkin for a distance less than the full width of said napkin and disposed adjacent to said impermeable sheet; a flexible impermeable disposal bag dimensioned to receive said napkin within its interior without folding said napkin, said bag folded to an area substantially less than said impermeable sheet and insertable through said slit-like opening to lie between the outer face of said impermeable sheet and said perforated wrapper; and adhesive means on the outer face of that portion of said perforated wrapping adjacent said impermeable sheet for securing said assemblage to an undergarment.

4,605,404

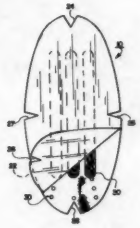
DISPOSABLE PAD FOR PANTY HOSE

Vincent R. Sneider, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319

Filed Jan. 16, 1985, Ser. No. 691,845

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385 R



11. A method of forming and constructing a disposable pad for attachment to panty hose and like undergarments which is secured by a self-stick adhesive applied to an outer surface member of said pad, the method including the steps of:

(a) proving an impervious backing-sheet member and contouring said backing-sheet member so as to conform to the desired shape of the pad;

(b) applying self-stick adhesive in defined patterns on the outer or backside of the backing-sheet member, with said applied adhesive so disposed as to leave a portion or portions of said backing-sheet member absent self-stick adhesive;

(c) arranging a plurality of absorbent fill portions and carrying said absorbent portions in close proximity to said backing sheet, said portions being of substantially the same thickness and positioned so as to abut each other, thereby providing a substantially equal division of the absorbent fill portions of said pad;

(d) locally securing the absorbent fill portions to the impervious sheet so that each securing means is disposed interior of the outer edges of the pad;

(e) providing a release sheet and covering all of the self-stick adhesive portions by and with said release sheet, the release sheet so disposed as to leave a portion of said backing sheet absent contact with said self-stick adhesive;

(f) trimming the exterior periphery of the pad including the backing-sheet member, the absorbent fill portions and the release sheet so that the edges of the pad are exposed and these exposed portions of the absorbent fill are disposed to contact the skin of the user, and

(g) at least two notches formed in the outer-edge portions of the pad, said notches disposed so as to straddle any formed seam or seams in the panty hose or like undergarment to which said pad is to be attached in use.

4,605,405

DYNAMICALLY MOVEABLE NAPKIN

Frederich O. Lassen, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

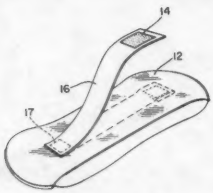
Filed Sep. 26, 1983, Ser. No. 536,034

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—389 **8 Claims**

1. A catamenial appliance comprising (i) means for positioning a sanitary napkin in a position to absorb body fluid discharge, said means adapted to be releasably securely adhered

to the crotch area of a wearer's undergarment, (ii) a sanitary napkin which comprises (1) a body fluid-impermeable baffle sheet, (2) a body fluid-permeable, body facing cover and (3) a layer of body fluid absorbent material disposed therebetween, and (iii) means for securely attaching said sanitary napkin to



said positioning means and for permitting constrained slideable movement of said sanitary napkin in response to wearer motion wherein said means (i) and (iii) comprise a strap adhered to said sanitary napkin (ii) and adapted to be releasably, adhesively securely adhered to the crotch area of a wearer's undergarment.

4,605,406

METHOD FOR FABRICATING PROSTHESIS MATERIAL

Patrick T. Cahalan, Champlin; Carolann M. Holmblad, Cambridge; Robert W. Pike, Jr., Minneapolis, and Eileen L. Schultz, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 3, 1984, Ser. No. 637,476

Int. Cl.[4] A61F *1/24*

U.S. Cl. 623—1 **21 Claims**

1. A method of fabricating a prosthesis material for use with a living body, the prosthesis material having a surface of improved smoothness, the method comprising the steps of:

(a) coating the interior surface of a tube with a solution comprised of a synthetic polymer, having suitable compatibility characteristics, dissolved in a solvent, and

(b) precipitating the polymer as a coating on the interior surface of the tube by contacting the polymer solution with a precipating solution comprised of a fluid which is miscible with the solvent but operable as a precipitating nonsolvent with respect to the polymer.

4,605,407

HEART VALVE REPLACEMENTS

Martin M. Black; Philip J. Drury, and Wendy B. Tindale, all of Sheffield, United Kingdom, assignors to The University of Sheffield, Sheffield, England

Filed Jan. 9, 1984, Ser. No. 569,383

Claims priority, application United Kingdom, Jan. 11, 1983, 8300636

Int. Cl.[4] A61F *2/24*

U.S. Cl. 623—2 **4 Claims**

1. A heart valve replacement, comprising

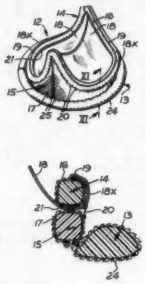
a two-part frame with parts defining a nip therebetween, one part being generally cylindrical, and the other part being generally ring-shaped and wire-like;

cloth coverings over both frame parts;

at least two leaflets each having a margin passing between the two frame parts and continuing around the wire-like frame part to a line of stitching spaced from the nip and connecting said leaflet to the cloth covering of that wire-like frame part; and

stitching spaced from said nip and between the cloth coverings of the two frames securing said frame parts together;

said nip between the two frame parts defining flexure lines, one along each of said leaflets spaced from the line of stitching between said leaflet and the wire-like frame part and from the stitching securing said two frame parts together, whereby during leaflet flexing tearing of either of



said leaflets between stitch holes of the stitching is eliminated.

4,605,408

ARTIFICIAL CARDIAC VALVE WITH ACTIVE OPENING

Alain Carpentier, Paris, France, assignor to Universite Pierre et Marie Curie Paris VI, France

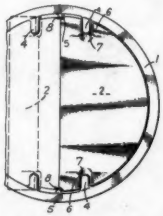
Filed Mar. 29, 1984, Ser. No. 594,736

Claims priority, application France, Mar. 30, 1983, 83 05274

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.[4] A61F *2/24*

U.S. Cl. 623—2 **4 Claims**



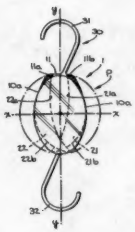
1. A cardiac valve comprising a fixed seat having a passage for blood flow therethrough including a circular ring comprising suture means and a swell, a mobile check unit for opening and closing the passage including two substantially semi-circular check valves, each check valve including two swells and whose edges rest on the swell on said ring when the valve is closed, said check valves effecting in their displacements a movement of translation and a movement of rotation, wherein the axes of rotation of each valve are constituted by two protuberances each fixed on the ring and together forming a common axis, said protuberances cooperating with grooves made in the two swells of each check valve, and means for maintaining the check unit in a controlled opened position when blood pressure is balanced on both sides thereof.

4,605,409

INTRAOCULAR LENS WITH MINIATURE OPTIC HAVING EXPANDABLE AND CONTRACTIBLE GLARE-REDUCING MEANS

Charles D. Kelman, North Shore Towers - 269 Grand Central Pkwy., Bldg. 3, Floral Park, N.Y. 11005

Filed May 21, 1984, Ser. No. 612,584
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 **22 Claims**



1. An intraocular lens comprising:

a lens body for focusing light rays on the retina of an eye, said lens body having an anterior and a posterior face and having a pair of imaginary coordinate axes at right angles to one another and to the optical axis and said lens body having a maximum dimension of substantially less than 5 mm along any line drawn through said lens body parallel to a given one of its pair of coordinate axes, said maximum dimension being defined by a pair of opposite peripheral edge portions of said lens body transverse to said one coordinate axis, and

masking means including a pair of wing portions operatively connected with said lens body for sliding movement along a face of said lens body between an expanded condition in which free inner edge portions of said wing portions are respectively located adjacent said peripheral edge portions of said lens body and said wing portions extend radially outwardly of said peripheral edge portions of said lens body for inhibiting light rays which are directed toward said peripheral edge portions from being scattered thereby toward the retina after the lens has been implanted in an eye, and a contracted condition in which said pair of wing portions are located substantially entirely within said maximum dimension of said pair of opposite peripheral edge portions of said lens body for permitting insertion of said lens through an incision in an eye which is substantially less than 5 mm in length.

4,605,410

INTRAOCULAR LENS

Dennis T. Grendahl, Medicine Lake, Minn., assignor to Surgidev Corporation, Goleta, Calif.

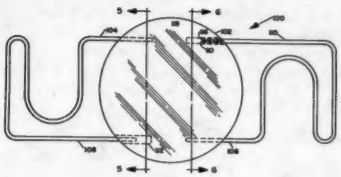
Division of Ser. No. 398,322, Jul. 15, 1982, Pat. No. 4,503,570. This application Mar. 11, 1985, Ser. No. 710,313
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 **1 Claim**

1. Intraocular lens for implant in an eye, said lens comprising:

a. plano-convex lens including a plano surface, a convex surface, and a finite edge surface about a junction between said plano surface and said convex surface;

b. plurality of closed loops for supporting said lens in said eye, said loops including two ends, at least one of said ends of each loop secured to said edge surface of said lens;

c. slidable means including an elongated hole in said edge of said lens of slightly larger geometrical cross section than the geometrical cross section of an other end of said loops; and,



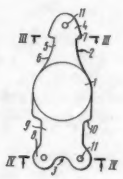
d. a geometrically configured channel running the length of said hole for relieving pressure between said hole and said slidable end of said loop.

4,605,411

ANTERIOR-CHAMBER INTRAOCULAR PROSTHETIC LENS

Svyatoslav N. Fedorov; Sergei I. Anisimov; Alexandr A. Karavaev; Vladimir G. Kisellev, all of Moscow; July A. Juzhelevsky, Leningrad, and Evgeny I. Degtev, Moscow, all of U.S.S.R., assignors to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza, Moscow, U.S.S.R.

Filed Sep. 17, 1985, Ser. No. 777,022
Claims priority, application U.S.S.R., Sep. 27, 1984, 3795791
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 **2 Claims**



1. An intraocular prosthetic lens, comprising an optical element, two diametrically opposite supporting setting elements shaped as platforms,

one of said platforms formed by a circumferential sector situated on the platform side distant from the optical element, and by a portion of said sector conjugated with the optical element, said conjugate portion having concave lateral sides forming shoulders at the place of joining with the sector,

the other of said platforms is formed by two rounded-off portions arranged symmetrically with respect to a plane passing through the centre of the optical element and substantially radially, said roundedoff portions being conjugated with each other and with the optical element through a transitional portion, projections being thus formed that face a direction opposite to the optical element,

both of said platforms have a biconcave crosssectional shape and are arranged in a common plane which is coplanar with the central plane of the optical element, and one of said platforms is thicker than the other.

4,605,412

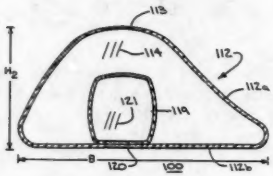
MAMMARY PROSTHESIS HAVING ADJUSTABLE PROJECTION

Lance J. LaForest, Scottsdale, Ariz., and Rita L. Taylor, Racine, Wis., assignors to Medical Engineering Corp., Racine, Wis.

Continuation-in-part of Ser. No. 459,383, Jan. 20, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,785

Int. Cl.[4] A61F *2/12*

U.S. Cl. 623—8 **4 Claims**



1. An improved prosthesis having a vertical axis defining a projection (H_1) which is adjustable without increasing the prosthesis base (B) dimension comprises:

a first distensible outer container having a substantially fixed base dimension;

a second column shaped contained having a flat top disposed within the interior of said first container and wherein a longitudinal axis of said column shaped contained is aligned substantially parallel to said vertical axis, the interior of said second container being partially filled with silicone gel and the remainder of the interior of said first container being completely filled with silicone gel; and

means for adding liquid to the silicone gel in the second container to further fill said prosthesis thereby extending said column shaped container vertically along said longitudinal axis thus vertically increasing said projection of said prosthesis without increasing said base dimension of said first container.

4,605,413

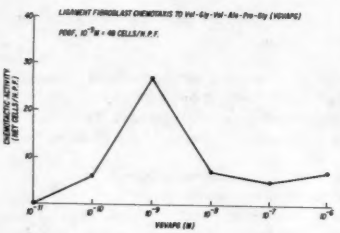
STIMULATION OF CHEMOTAXIS BY CHEMOTACTIC PEPTIDES

Dan W. Urry, Birmingham, Ala., and Robert M. Senior, Clayton, Mo., assignors to The University of Alabama at Birmingham, Birmingham, Ala.

Filed Sep. 19, 1983, Ser. No. 533,670

Int. Cl.[4] A61F *2/02;* A01N *1/02, 25/00;* A61K *9/38*

U.S. Cl. 623—11 **11 Claims**


LIGAMENT FIBROBLAST CHEMOTAXIS TO Val-Gly-Val-Ala-Pro-Gly (VGVAPG)
PDBF, 10^{-9}M + 4B CELLS/N.P.F.
CHEMOTACTIC ACTIVITY (NET CELLS/H.P.F.)
VGVAPG (M)

1. A prosthetic device wherein a surface of said device has a chemotactic peptide of the formula

$$B^1—X—(APGVGV)_n—Y—B^2$$

wherein

A is a peptide-forming residue of L-alanine;

P is a peptide-forming residue of L-proline;

G is a peptide-forming residue of glycine;

V is a peptide-forming residue of L-valine;

B^1 is H or a biocompatible N-terminal group;

B^2 is OH, OB^3 where B^3 is a non-toxic metal ion, or a biocompatible C-terminal group;

X is PGVGV, GVGV, VGV, GV, V, or a covalent bond;

Y is APGVG, APGV, APG, AP, A, or a covalent bond; and

n is an integer from 1 to 100; incorporated into said surface.

4,605,414

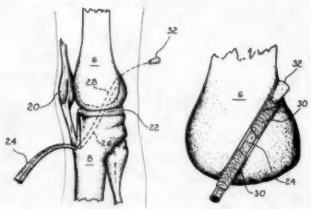
RECONSTRUCTION OF A CRUCIATE LIGAMENT

John Czajka, One Executive Park Dr., Albany, N.Y. 12203

Filed Jun. 6, 1984, Ser. No. 617,742

Int. Cl.[4] A61F *2/08*

U.S. Cl. 623—13 **5 Claims**



1. Process for surgically reconstructing the anterior cruciate ligament of the knee joint comprising the steps of forming aligned holes through both the tibia and the femur towards the points of origin of the damaged ligament, removing the damaged ligament and substituting a composite graft therefor by severing a strip of the patellar tendon, then fitting the same into an open-ended sleeve of synthetic biocompatible material, fitting the two-ply composite structure within the aligned holes formed in the tibia and femur and using a fastening means to secure the free end of the composite structure in place within the femur.

4,605,415

BIOREACTIVE MATERIALS

Raymond M. Richez, Mons, Belgium, assignor to Region Wallonne, representee par l'Executif Regional Wallon, Brussels, Belgium

Filed Dec. 2, 1983, Ser. No. 557,495

Claims priority, application Belgium, Dec. 2, 1982, 895229

Int. Cl.[4] A61F *2/28;* C03C *3/097*

U.S. Cl. 623—16 **7 Claims**

1. A vitreous anti corrosive bioreactive material consisting essentially of a mixture of 20 to 50% by weight of SiO_2, 15 to 25% by weight of CaO, 5 to 10% by weight of P_2O_5, 15 to 25% by weight of Na_2O and 3 to 15% by weight of Al_2O_3, formed from a mixture of oxides or their metallic precursors yielding equivalent quantities of oxides by fusion, said material forming a silico-aluminous layer of high corrosion resistance in the presence of living tissues.

4,605,416

APPARATUS FOR HIP ARTHROPLASTY

Charl J. Grobbelaar, Transvaal, South Africa, assignor to Arthroplasty Research & Development (Pty) Ltd., Pretoria, South Africa

Filed Aug. 1, 1984, Ser. No. 636,684

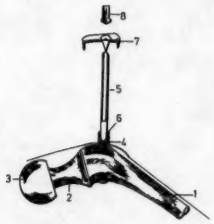
Claims priority, application South Africa, Aug. 18, 1983, 83-3562

Int. Cl.[4] A61F *2/36, 5/04*

U.S. Cl. 623—23 **4 Claims**

1. The combination of a femoral prosthetic device for use in hip arthroplasty and a greater trochanter fixation device, said

femoral prosthetic device comprising a stem, a neck and a ball for use in combination with an acetabular prosthesis, the stem, neck and ball of the femoral prosthetic device being unperforated, said greater trochanter fixation device comprising a loop part and a u-bolt, said loop part having a ring-like portion



constructed and arranged to be passed over and thereby attached to the stem without perforating the same, the loop part having a hole formed therein through which the u-bolt passes unhindered, said u-bolt being swingable in said hole, the loop part and the stem being mutually contoured such that the loop part is adopted to snugly embrace the stem.

4,605,417

PROSTHETIC JOINT

K. E. Fleischauer, 2031 SE. 33rd St., Okeechobee, Fla. 33472

Filed Oct. 3, 1984, Ser. No. 657,370

Int. Cl.[4] A61F *2/66*

U.S. Cl. 623—49 **20 Claims**

1. A prosthetic ankle device for use with a rigid prosthetic lower leg portion and a rigid prosthetic foot portion, comprising:

upper and lower plates adapted for attachment to flat faces on said lower leg and foot portions respectively, and disposed therebetween;

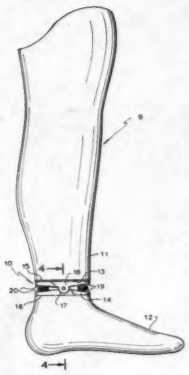
said upper and lower plates having dual interfittable hinge means disposed along facing portions of said plates, said hinge means having complementary ridge and trough shapes which, when interfitted, bear against one another over a substantial area and define an axis of rotation for the foot portion relative to the lower leg portion, the axis being perpendicular to a plane of the leg portion and foot portion, said device further including:

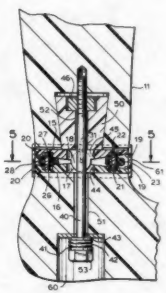
(a) longitudinally extending means from the leg portion to the foot portion which urges the ridge and trough shapes together, and

(b) laterally extending means preventing separation of the ridge and trough shapes,

said longitudinally extending means and said laterally extending means providing a safety measure in the event of failure of either of said means; and

opposed biasing means located between said plates and spaced on both sides of said axis of rotation for progressively resisting said rotation about the axis, whereby natural foot rotation about an ankle is simulated with respect to cushioning of foot strikes without risking loss of balance.





4,605,418

AFTERTREATMENT OF DYED CELLULOSIC MATERIALS

Nick J. Christie, Mendham, N.J.; Randall A. Cox, Greenville, S.C.; Robert E. James, Rock Hill, S.C., and James C. Stevenson, Ft. Mill, S.C., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Continuation of Ser. No. 473,550, Mar. 9, 1983, Pat. No. 4,531,946. This application Jan. 28, 1985, Ser. No. 695,578

Int. Cl.[4] D06M *15/52*

U.S. Cl. 8—192 5 Claims

1. In a process for aftertreating dyed cellulosic materials and their blends, the improvement comprising aftertreating dyed cellulosic materials and their blends with a finish in an amount sufficient to improve wet and dry crockfastness, the finish comprising effective amounts of a reactive component and a blocked urethane prepolymer component wherein the active component is an epoxidized polyamine by applying, drying and curing the reactive and prepolymer components in the finish in situ on the materials and blends.

4,605,419

5,8-DIHYDROXY NAPHTHALENE-1,4-DIONE DERIVATIVE AND A HAIR DYE COMPOSITION CONTAINING THE SAME

Masashi Kikuchi, and Masahiro Matsuoka, both of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

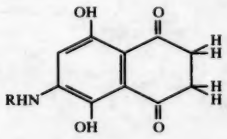
Filed Apr. 19, 1985, Ser. No. 725,069

Claims priority, application Japan, Apr. 20, 1984, 59-79965; Jul. 25, 1984, 59-154946; Sep. 18, 1984, 59-195471; Sep. 18, 1984, 59-195472; Oct. 16, 1984, 59-216560; Jan. 17, 1985, 60-6519; Mar. 5, 1985, 60-42930; Mar. 5, 1985, 60-42931

Int. Cl.[4] A61K *7/13*; C07C *87/64*

U.S. Cl. 8—426 9 Claims

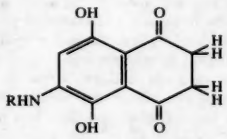
1. A naphthalene derivative having the general formula:



(I)

wherein R represents hydrogen, an alkyl group having 1 to 8 carbon atoms, an $R^1O(CH_2)_n$ group, or a benzyl group, R^1 represents hydrogen or a lower alkyl group, and n represents an integer of 2 or 3.

6. A hair dye composition comprising a naphthalene derivative having the general formula:



(I)

wherein R represents hydrogen, an alkyl group having 1 to 8 carbon atoms, an $R^1O(CH_2)_n$ group, or a benzyl group, R^1 represents hydrogen or a lower alkyl group, and n represents an integer of 2 or 3.

4,605,420

METHOD FOR THE BENEFICIATION OF OXIDIZED COAL

Phillip E. McGarry, Palmerton; David E. Herman, Jim Thorpe; Robert A. Treskot, Walnutport, and David C. Fistner, Sr., Bethlehem, all of Pa., assignors to Sohio Alternate Energy Development Company, Cleveland, Ohio

Filed Jul. 2, 1984, Ser. No. 627,163

Int. Cl.[4] C10L *9/02, 1/32*

U.S. Cl. 44—1 R 3 Claims

1. A process for modifying the surfaces of oxidized coal and beneficiating said coal, said process comprising the steps of:

(i) subjecting coal having oxidized surfaces to high shear agitation in water;

(ii) desliming the coal mixture resulting from step (i); and

(iii) introducing the deslimed coal mixture resulting from step (ii) to froth flotation beneficiation, said froth flotation beneficiation comprising admixing said deslimed coal mixture with a surface treating mixture comprised of a polymerizable monomer, a catalyst and a liquid organic carrier.

4,605,421

PROCESS FOR THE PREPARATION OF A CARBONACEOUS-DERIVED SOLID FUEL PRODUCT

Jim W. Kauffman; William C. Laughlin, both of Edmond, and Roger A. Baldwin, Oklahoma City, all of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Sep. 10, 1984, Ser. No. 648,471

Int. Cl.[4] C10L *9/00, 9/08*

U.S. Cl. 44—1 F 14 Claims

1. A process for preparing a solid, particulated carbonaceous fuel composite having an improved heating value and substantially reduced tendencies to ignite spontaneously and undergo particle size degradation, consisting essentially of:

drying a solid, particulated carbonaceous material ranging in size from about two inches to about +8 mesh by heating said material at a temperature ranging from about 100° C. to about 150° C. to remove and recover a substantial portion of inherent water in said particulated carbonaceous material and provide a dried, particulated carbonaceous material having a reduced water content;

pyrolyzing at least a portion of said dried, particulated carbonaceous material by heating said material at a temperature sufficient to pyrolyze said portion to a particulated carbonaceous-based char material and to simultaneously recover from said portion carbonaceous-based tar by-products, said portion of dried, particulated carbonaceous material being an amount which upon pyrolysis will provide at least about 0.5% by weight of said carbonaceous-based tar by-products based upon the weight of a material to be contacted with a water-in-tar emulsion, said material and said water-in-tar emulsion being defined hereinbelow;

providing a water-in-tar emulsion prepared from said recovered carbonaceous-based tar by-products;

contacting said water-in-tar emulsion with at least one material selected from the group consisting of said dried, particulated carbonaceous material and a mixture of said dried, particulated carbonaceous material and said particulated carbonaceous-based char material at a temperature ranging from about 50° C. to about 600° C. to provide said solid, particulated carbonaceous fuel composite; and

recovering said solid, particulated carbonaceous fuel composite.

4,605,422
OIL-IN-ALCOHOL MICROEMULSION

Errol D. Goddard, Haworth, N.J., and Pak S. Leung, Highland Mills, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

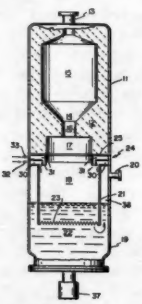
Continuation of Ser. No. 595,421, Mar. 30, 1984, abandoned. This application Dec. 26, 1985, Ser. No. 815,192
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 **7 Claims**

1. An oil-in-alcohol microemulsion composition having a discontinuous phase and a continuous phase comprising;
(a) alcohol, in an amount sufficient to form a continuous phase in the composition, and
(b) alcohol-insoluble oil particles having a vapor pressure of less than 80 mm of Hg at 25° C. and forming a discontinuous phase in said composition, said particles having a particle size of less than about 0.1 micron; and,
(c) at least one emulsifier selected from the group consisting of nonionic surfactants, said emulsifier being present in an amount sufficient to stabilize the composition, wherein said alcohol-insoluble oil particles are present in an amount of between about 0.001 and about 20 wt. percent based on the weight of the composition, and wherein said emulsifier is present in an amount of between about 0.1 times and about 100 times the weight of said alcohol-insoluble oil particles in the composition, and wherein said alcohol is present in an amount of at least about 26 wt. percent based on the weight of the composition, with the proviso that the total weight of the composition not exceed 100 wt. percent, said composition being devoid of anionic surface-active agent.

4,605,423
APPARATUS FOR GENERATING AND COOLING SYNTHESIS GAS

Wolfgang Koog, Pleasantville, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 367,821, Apr. 12, 1982, Pat. No. 4,466,808. This application Jul. 9, 1984, Ser. No. 629,149
Int. Cl.[4] C10J *3/48, 3/84*
U.S. Cl. 48—69 **3 Claims**

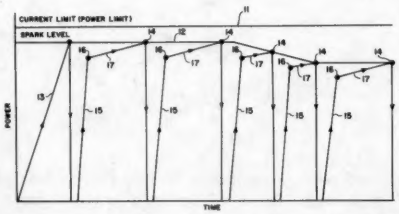


1. A synthesis gas generation apparatus including
a vertically extending synthesis gas generator having a lower outlet through which hot synthesis gas is withdrawn;
means defining a vertically extending quench chamber, below said vertically extending synthesis gas generator, having a hot synthesis gas inlet therein joining said lower outlet of said synthesis gas generator whereby hot synthesis gas exits said synthesis gas generator and is admitted to said quench chamber, and an exit conduit at the upper portion of said quench chamber, said quench chamber containing a body of cooling liquid in the lower portion thereof;
an attenuated vertically extending dip tube in said quench chamber having a vertically extending axis, inner and outer perimetric surfaces, and an upper inlet through which hot synthesis gas entering said quench chamber is admitted to said dip tube, through which said gas moves toward a lower outlet end of said dip tube located within said body of liquid;
a quench ring adjacent to the inner perimetric surface at the inlet end of said dip tube, said quench ring having a liquid-inlet;
a liquid outlet on said quench ring for directing a curtain of liquid along the inner perimetric surface of said attenuated dip tube and toward the outlet end of said dip tube;
spray means in said quench ring for directing a stream of liquid away from the inner perimetric surface of said attenuated vertically extending dip tube and toward the axis of said dip tube;
and said quench chamber surrounding said attenuated vertically extending dip tube forming a closed chamber thereabout providing an annular passageway therebetween, and said exit conduit comprising a quenched gas outlet adjacent to the inlet end of said attentuated dip tube, and a quench bottoms liquid outlet in said quench chamber adjacent to the outlet end of said dip tube;
whereby charge gas admitted to the inlet end of said attenuated vertically extending dip tube is contacted with liquid from said liquid outlet on said quench ring and said spray means, as the charge gas passes downwardly along the axis of said attenuated dip tube, and thereafter into a body of liquid maintained in said quench chamber, said charge gas leaving said dip tube, passing through the annular passageway between the outside of the outer perimetric surface of the dip tube and the inside of the inner perimetric surface of the quench chamber, and thence to the quench gas outlet of said quench chamber.

4,605,424
METHOD AND APPARATUS FOR CONTROLLING POWER TO AN ELECTRONIC PRECIPITATOR

David F. Johnston, 103 Fairmont Dr., Hampton, Va. 23666

Filed Jun. 28, 1984, Ser. No. 625,436
Int. Cl.[4] B03C *3/68*
U.S. Cl. 55—2 **9 Claims**



1. A method for controlling the power to a precipitator with a power varying means for the purpose of closely approximating the actual spark line in order to maximize the efficiency of the precipitator, where the power received by said precipitator is determined by the firing angle of said power varying means and a selected setback and where the power is varied to follow a fast ramp and a slow ramp, comprising the steps of:
storing in a look-up table in memory fast ramp values and slow ramp values in pairs corresponding to all possible firing angles and setbacks according to a predetermined formula;
selecting a setback;
selecting a spark rate;
detecting the occurrence of a spark;
reducing the power to said precipitator to zero in response to the detection of a spark;
retrieving from memory the appropriate fast and slow ramp

values corresponding to the selected setback and the firing angle;

automatically adjusting the retrieved slow ramp value according to the spark rate;

increasing the power to the precipitator over a fixed period of time along a fast ramp defined by the retrieved fast ramp value; and

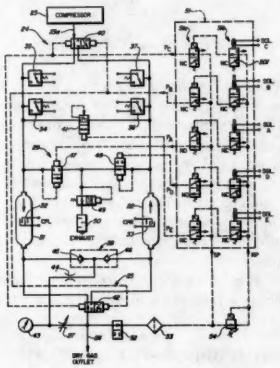
increasing the power to the precipitator until the precipitator sparks along a slow ramp defined by the retrieved slow ramp value as adjusted according to the spark rate, whereby the retrieved fast ramp value and retrieved slow ramp value as adjusted according to the spark rate cause the precipitator to spark at the selected spark rate thereby closely approximating the actual spark line and maximizing the operating efficiency of the precipitator.

4,605,425

HEATERLESS DRYER HAVING VARIABLE CYCLE

Marcel G. Verrando, Ocala; Michael B. Duich, Bellview, and Bradley T. Overton, Ocala, all of Fla., assignors to Pall Corporation, East Hills, N.Y.

Filed May 6, 1985, Ser. No. 731,563
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—20 **32 Claims**



1. A process for reducing the concentration of first gas in mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, which comprises the steps of:

(a) during a predetermined time interval, passing an influent flow of the mixture through a bed of a sorbent having a preferential affinity for the first gas, adsorbing the first gas thereon to form a gaseous effluent having a concentration thereof below the maximum, and forming a concentration gradient of first gas in the bed progressively decreasing from one end to the other end as the adsorption continues and an increasing concentration of first gas in the second gas defining a concentration front progressively advancing in the bed from one end to the other end as sorbent capacity thereof decreases;

(b) sensing whether the first gas front in said sorbent bed has advanced by a predetermined extent at the end of said first predetermined time interval to decide whether purging of said sorbent bed is required after said predetermined time interval;

(c) at the end of said predetermined time interval, closing off the influent flow of gas, and in response to the decision in step (b), conditionally depressurizing the bed of said sorbent and introducing a purge gas to regenerate said sorbent; and thereafter,

(d) repeating steps (a), (b) and (c) above;

wherein said process further comprises,

recording a history of the decision in step (b) of whether purging of said sorbent bed is required, and

during the repetition of steps (a), (b) and (c) above, decreasing the duration of said predetermined time interval based upon said recorded history indicating that purging of said sorbent bed is frequently required, and increasing said predetermined time interval based upon said recorded history indicating that purging of said sorbent bed is infrequently required.

23. A control system for a pressure-swing desiccant gas dryer having a first desiccant bed and a second desiccant bed, gas to be dried being alternately directed by valves to pass through one of the beds providing adsorption of vapor while the other desiccant bed is being regenerated after depressurization or is in an idle condition in response to at least one cyclic bed select signal and at least one regeneration enable signal, respectively, the control system comprising, in combination,

a capacitance probe in each desiccant bed so that the level of condensate saturation of the desiccant in each bed is indicated by the capacitance of the respective probe,

a probe interface for generating a digital signal indicating the capacitance of the probe in the desiccant bed undergoing regeneration,

a microcomputer executing a stored sequence of instructions, said microcomputer comprising means for generating said bed select signal to switch the bed providing adsorption after a predetermined adsorption time interval,

means for receiving said digital signal generated by said probe interface at the end of said adsorption time interval, comparing said digital signal to a predetermined threshold signal representative of the condensate saturation level for which regeneration is required, and generating said regeneration enable signal in response to said means for comparing the final count to the predetermined threshold indicating that regeneration is required, and

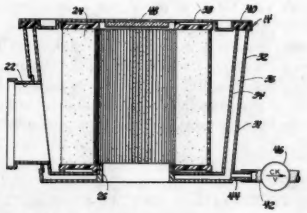
means for conditionally changing the duration of said adsorption time interval in response to said regeneration enable signal so that said duration of the adsorption interval decreases at a limited rate when purging is frequent and increases at a limited rate when purging is infrequent, and for limiting the duration of said adsorption time interval so as not to exceed a predetermined maximum and so as not to be less than a predetermined minimum.

4,605,426

INSULATED ENGINE AIR CLEANER

William F. Thornburgh, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1985, Ser. No. 760,170
Int. Cl.[4] B01D *35/30*
U.S. Cl. 55—267 **3 Claims**

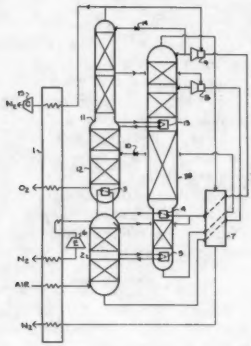


1. In an engine air cleaner having a housing with an inlet and an outlet and a filter mounted in an air passage therebetween, the improvement comprising said housing having double wall means forming a vacuum chamber extending about said filter, and vacuum establishing means for establishing a subatmospheric pressure in said chamber to thereby vacuum insulate the air cleaner for both heat transfer and noise attenuation with respect to the air passing therethrough.

4,605,427
CRYOGENIC TRIPLE-PRESSURE AIR SEPARATION WITH LP-TO-MP LATENT-HEAT-EXCHANGE

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 480,786, Mar. 31, 1983. This application Jun. 6, 1983, Ser. No. 501,264
Int. Cl.[4] F25J *3/02*
U.S. Cl. 62—22 **21 Claims**



1. A process for producing oxygen of at least about 96% purity comprising

(a) feeding at least part of a supply of moisture and CO_2 free air to a high pressure (HP) rectification column;

(b) feeding at least part of the oxygen enriched liquid bottom product from the HP column to a medium pressure (MP) column;

(c) feeding substantially all of the further oxygen enriched liquid bottom product from the MP column to a low pressure (LP) column comprised of an argon stripping section and at least one rectification section;

(d) reboiling both the MP and LP columns by latent heat exchange with HP column vapor;

(e) exchanging latent heat between vapor from an intermediate height of the LP column and liquid from an intermediate height of the MP column, and returning reflux to the LP column and reboil to the MP column;

(f) withdrawing gaseous N_2 from the MP column overhead

(g) withdrawing oxygen of said purity from the bottom of said LP column.

12. An apparatus comprising: means designed for separating from air, oxygen of at least 96% purity by cryogenic distillation including a high pressure rectification column; a medium pressure distillation column which is reboiled in part by the HP column; a low pressure distillation column comprising rectifier and argon stripper which is reboiled by the HP column; a reboiler/reflux condenser which exchanges latent heat between LP column intermediate height vapor and MP column intermediate height liquid; and means for withdrawing oxygen of said purity from the bottom of said LP column And a conduit for withdrawal of gaseous N_2 from the MP column overhead.

4,605,428
SINTERED HIGH-SILICA GLASS AND ARTICLES COMPRISING SAME

David W. Johnson, Jr., Pluckemin; John B. MacChesney, Lebanon, and Eleizer M. Rabinovich, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1984, Ser. No. 637,492
Int. Cl.[4] C03B *19/06, 37/016*
U.S. Cl. 65—2 **9 Claims**

1. Method of fabricating a high silica glass body, the method comprising

(a) forming a first gel, the first gel formed either

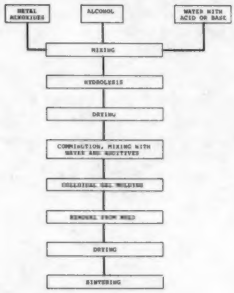
(i) by a first process that comprises forming a first sol by dispersing first particles in a liquid, with the first particles consisting substantially of colloidal silica particles, and gelling the first sol, or

(ii) by a second process comprising hydrolyzing at least one metal alkoxide;

(b) at least partially drying the first gel, thereby forming an intermediate high silica material;

(c) forming second particles by comminution of intermediate high silica material;

(d) forming a second sol by dispersing the second particles in a liquid;



(e) gelling the second sol to form a second gel;

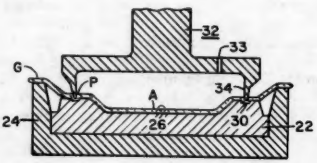
(f) substantially drying the second gel, whereby a substantially dry porous body is formed, the porous body having a pore size distribution, such that at most about 5% of the total pore volume of the porous body is contributed by pores having an effective pore diameter greater than about 0.5 μm, and such that at least about 10% of the total pore volume of the porous body is contributed by pores having an effective pore diameter that is greater than about 0.02 μm; and

(g) sintering the porous body at a sintering temperature, whereby a high silica glass body is produced.

4,605,429
TRIMMING PRODUCTS FROM SHEET GLASS

Lawrence S. Rajnik, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 7, 1985, Ser. No. 731,362
Int. Cl.[4] C03B *11/00*
U.S. Cl. 65—105 **10 Claims**



1. A method of separating a newly formed article from sheet glass while still in a semi-molten condition which comprises:

suspending the sheet glass over a shallow groove adjacent the periphery of the formed article,

initially maintaining the suspended portion of said sheet glass out of contact with surface portions of said groove and thus inhibiting the loss of heat from such peripheral portion through conduction,

forcing said suspended portion of said sheet into said groove and reducing the thickness of the sheet within the groove between the article and the remainder of the sheet,

terminating the reduction in thickness of the sheet within the peripheral groove while maintaining a thin integral con-

nection section between the article and the remainder of the sheet,

and cooling said thin section to cause a thermal crack-off separation between the article and the remainder of the sheet along said thin section within said shallow groove.

4,605,430

PLANT GROWTH PROMOTER FROM RICE BRAN AND PROCESSES FOR MAKING AND USING

Nadir B. Godrej, and Manmohan S. Thakur, both of Bombay, India, assignors to Godrej Soaps Private Limited, Bombay, India

Filed Nov. 9, 1984, Ser. No. 670,175
Int. Cl.[4] C05F *11/00*
U.S. Cl. 71—23 **56 Claims**

1. A process for the preparation of a plant growth promoter comprising the sequential steps of:

(A) saponifying under aqueous liquid phase conditions with alkali metal hydroxide a starting material consisting essentially of a residue,

(1) said residue having been derived from the distillation of crude fatty acids,

(2) said crude fatty acids having been derived from crude rice bran oil by at least one process selected from the group consisting of:

(a) distillative deacidification, and

(b) hydrolysis,

(3) said residue being characterized by comprising on a 100 weight percent total residue basis:

(a) from about 28 to 44.5 weight percent unsaponifiables,

(b) from about 6.8 to 7.2 weight percent free fatty acids, and

(c) from about 48.7 to 64.3 weight percent glycerides,

(4) said residue being further characterized by having a saponification value ranging from about 88.7 to 130.2, thereby to produce a resulting saponified reaction mixture containing alkali metal organic salts,

(B) contacting under aqueous liquid phase conditions alkaline earth metal salt with said resulting saponified reaction mixture, thereby to convert said alkali metal organic salts into alkaline earth metal salts, and

(C) separating the solids produced from said contacting from the resulting associated liquid phase.

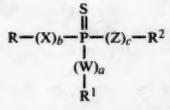
4,605,431

COMPOSITIONS AND METHODS FOR REDUCING HERBICIDAL INJURY

David E. Schafer, and Albert J. Czajkowski, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 465,965, Feb. 14, 1983, Pat. No. 4,507,143, which is a division of Ser. No. 923,136, Jul. 10, 1978, Pat. No. 4,379,716, which is a continuation-in-part of Ser. No. 670,789, Mar. 26, 1976, abandoned. This application Dec. 24, 1984, Ser. No. 685,873
Int. Cl.[4] A01N *57/10, 37/00*
U.S. Cl. 71—87 **37 Claims**

1. A method of reducing injury to crops by thiolcarbamate herbicides which comprises applying to the soil, crop or crop seed an effective safening amount of a compound of the formula



wherein

a, b and c represent the integers zero or one, but cannot all be zero simultaneously;

W, X and Z independently represent oxygen or sulfur;

R, R^1 and R^2 independently represent hydrogen, C_{1-13} alkyl, lower alkyl substituted lower alkyl, nitro lower alkyl, halo lower alkyl, lower alkenyl, halo lower alkenyl, lower alkynyl, halo lower alkylcarbonyl, halo lower alkenylsulfonyl lower alkyl, mono-lower alkyl amino, di-lower alkyl amino, halo lower alkenyl thio lower alkyl, lower mono- or di-alkyl amino carbonyl lower alkyl, lower mono- or di-alkyl aminothiocarbonyl, halophenylthio, para-aminosulfonyl phenyl, para-nitrobenzoyl, halophenylthio lower alkyl, phenyl, benzyl, naphthyl, naphthyl substituted by one or two lower alkyl or halo moieties, α-nitromethylbenzyl, α-methylbenzyl, phenyl substituted by one to three C_{1-13} alkyl, lower alkenyl, halo, NO_2, CN, CF_3 and CH_3S- moieties; and no more than one of R, R^1 and R^2 can be quinolyl, 1-pyridinyl lower alkyl, 5-chlorothiophene-2-lower alkyl and N-lower alkyl di-lower alkyl anilino carbonyl lower alkyl; provided that when a is zero, c is one and Z is sulfur, R^2 cannot equal hydrogen or halophenyl; phenyl cannot be substituted with NO_2 and CF_3 simultaneously; when X and W are oxygen and Z is sulfur R, R^1 and R^2 cannot simultaneously equal CH_3; and when W, X and Z are oxygen R, R^1 and R^2 cannot simultaneously equal phenyl.

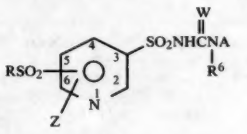
4,605,432

PYRIDYL SULFONE HERBICIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

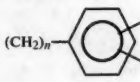
Division of Ser. No. 408,491, Aug. 16, 1982, Pat. No. 4,456,469, which is a continuation-in-part of Ser. No. 128,176, Apr. 24, 1980, abandoned. This application Apr. 9, 1984, Ser. No. 598,186
Int. Cl.[4] C07D *401/12;* A01N *47/36*
U.S. Cl. 71—92 **24 Claims**

1. A compound of the formula:



wherein

R is C_1–C_6 alkyl, C_3–C_6 alkenyl, C_2–C_4 alkoxyalkyl, C_5–C_6 cycloalkyl, $R^1OCH_2CH_2OCH_2$, $R^1OCH_2CH_2OCH_2CH_2$,



CF_3, CF_3CH_2 or HGLCCF$_2$, HCF_2;

R^1 is methyl or ethyl;

R^2 and R^3 are independently H, Cl, OCH_3, F, CH_3, Br, NO_2 or CF_3;

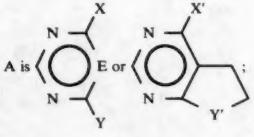
n is 0, 1 or 2;

G is F, Cl, Br or CF_3;

L is F, Cl or H;

Z is H, F, Cl, Br, CH_3, CH_3O or CH_3S;

W is O or S;



X is CH_3, CH_3O or Cl;

Y is CH_3, CH_3CH_2, CH_3O, CH_3CH_2O, CF_3CH_2O, $CH_3O(CH_2)_m$, $CH_3OCH_2CH_2O$, $R^4O_2CR^5CHO$, $(CH_3)_2N$, $CH_3(CH_2CN)N$, $NHCH_3$ or NH_2;

E is CH, CCH_3, CCH_2CH_3 or CCH_2CH_2Cl;

R^4 is H, CH_3 or CH_3CH_2;

R^5 is H or CH_3;

R^6 is H or CH_3;

m is 1 or 2;

X′ is H, CH_3, CH_3O or Cl; and

y' is O or CH_2;
and their agriculturally suitable salts, provided that:
(1) when W=S, then R^6 is H; and
(2) when X=Cl, then E=CH and Y=CH_3, C_2H_5, CH_3O, C_2H_5O, $CH_3O(CH_2)_m$—, NH_2, $NHCH_3$ or $N(CH_3)_2$.

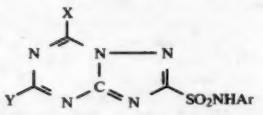
4,605,433

1,2,4-TRIAZOLO[1,5-A]-1,3,5-TRIAZINE-2-SULFONAMIDES AND COMPOSITIONS AND METHODS OF CONTROLLING UNDESIRED VEGETATION

Norman R. Pearson, Walnut Creek, and William A. Kleschick, Martinez, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 30, 1985, Ser. No. 739,250
Int. Cl.[4] C07D *251/72, 487/04;* **A01N** *43/64, 43/90*
U.S. Cl. 71—93 **25 Claims**

1. A compound having the formula:



I

wherein X and Y independently represent hydroxy, carboxyl, hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or halogen and Ar represents substituted or unsubstituted radicals which are phenyl; 1- or 2-naphthyl; 2-, 3- or 4-pyridyl; 2- or 3-thienyl; 2- or 3-furyl; 2-, 4- or 5-thiazolyl; 2-, 4-or 5-imidazolyl; 2-, 4- or 5-oxazolyl; 3-, 4- or 5-isothiazolyl; 3-, 4- or 5-isoxazolyl; 3-, 4- or 5-pyrazolyl; 2-benzthiazolyl; 2-benzoxazolyl; 2-benzimidazolyl or 1-benztriazolyl, wherein the substituents in the above radicals are halogen, —NO_2, C_1–C_4 haloalkyl, C_1–C_4 haloalkylsulfinyl, C_1–C_4 haloalkylthio, C_1–C_4 haloalkylsulfonyl, C_1–C_4 alkyl, cyano, —$CONH_2$, —$CONHR^8$, —$CONR^8R^9$, —$COOR^7$ and —SO_3R^8 wherein R^7, R^8 and R^9 represent C_1–C_4 alkyl.

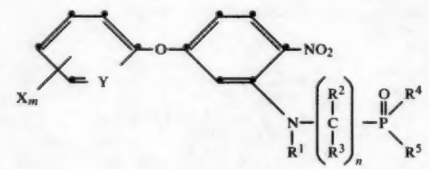
4,605,434

HERBICIDAL AND PLANT-GROWTH-REGULATING (2-NITRO-5-ARYLOXY-PHENYLAMINO)-ALKYLPHOSPHINE OXIDE DERIVATIVES AND COMPOSITIONS

Ludwig Maier, Arlesheim, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,131
Claims priority, application Switzerland, Jul. 20, 1983, 3989/83
Int. Cl.[4] C07F *9/58, 9/53;* **A01N** *51/24, 51/22*
U.S. Cl. 71—94 **26 Claims**

1. A (2-nitro-5-aryloxy-phenylamino)-alkylphosphine oxide derivative of the formula



wherein
X is halogen or CF_3,
Y is nitrogen or —CH=,
R^1 is hydrogen, C_1–C_4-alkyl, or aralkyl having 1–4 carbon atoms in the alkyl moiety,
R^2 is hydrogen or C_1–C_4-alkyl,
R^3 is hydrogen, C_1–C_4-alkyl, phenyl, benzyl or C_1–C_4-alkyl-benzyl,
R^4 and R^5 independently of one another are each C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_2–C_6-alkoxyalkyl, or aralkyl having 1–4 carbon atoms in the alkyl moiety,
m is zero to 3, and
n is 1 to 3.

21. A method of controlling undesirable plant growth or for regulating plant growth, which method comprises applying to plants, to the locus thereof or to parts of plants an effective amount of a compound of claim **1**.

4,605,435

RECYCLING OF STEEL PLANT DUSTS TO STEEL FURNACES

Willem P. C. Duyvesteyn, Benthuisen, Netherlands, assignor to Amax Inc., Greenwich, Conn.

Filed Jan. 31, 1985, Ser. No. 696,981
Int. Cl.[4] C22B *7/02*
U.S. Cl. 75—0.5 R **3 Claims**

1. A method for converting iron-containing steel plant dust into recyclable agglomerates, said steel plant dust containing by weight about 20 to 60 percent iron, about 5 to 40 percent zinc, about 0.5 to 6 percent lead and the balance essentially residual metal oxides, including cadmium oxide, and oxides of CA, Mn, Si, Mg, Al, Cu, Ba, Cr and Ni which comprises, hydrometallurgically treating said dust to remove substantially said zinc, lead and cadmium, mixing said hydrometallurgically treated steel plant dust with about 0.5 to 2 percent by weight of Portland cement and water sufficient for the dust to stick together as pellets, pelletizing said mixture to form rounded agglomerates having an average size ranging from about ¼ to 2 inches, and air-drying said agglomerates to increase the strength thereof for mechanical handling.

4,605,436

METHOD OF PRODUCING TITANIUM ALLOYS

Hermann Andörfer, Fürth, Fed. Rep. of Germany, assignor to GfE Gesellschaft fur Elektrometallurgie mbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 621,046
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3409614
Int. Cl.[4] C22B *4/00*
U.S. Cl. 75—10.65 **4 Claims**

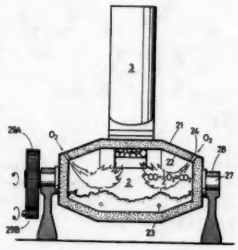
1. A method of making a titanium alloy containing titanium and, as alloying elements, tin, zirconium, molybdenum and aluminum, said method comprising the steps of:
(a) forming a master alloy of the following composition:
11 to 13% by weight tin,
11 to 13% by weight zirconium,
22 to 24% by weight molybdenum,
22 to 24% by weight chromium,
less than 0.5% by weight unavoidable impurities, and balance aluminum;
(b) constituting said master alloy as a melting electrode; and
(c) in a vacuum-electric-arc furnace utilizing said melting electrode, melting titanium to form a titanium alloy melt and casting same to form a titanium alloy containing all of said elements as alloying elements of the titanium alloy and at least some of said elements in relative proportions in the titanium alloy corresponding to their relative proportions by weight in said master alloy.

4,605,437

REACTOR IRON MAKING

Saburo Sugiura, Nagoya; Masanobu Ikeda, Mie, and Noboru Demukai, Nannou, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 30, 1982, Ser. No. 445,534
Claims priority, application Japan, Feb. 1, 1982, 57-14443
Int. Cl.[4] C21C *11/00*
U.S. Cl. 75—43 4 Claims



1. A method of reactor iron making without using electric power in said reactor comprising:

continually charging iron scrap and a solid non-petroleum carbonaceous material selected from the group consisting of powdery coal and coke from above into molten iron in a reactor with space over the molten iron, said carbonaceous material being charged by injecting it with a stream of nitrogen gas or air, blowing oxygen gas into the molten iron beneath its surface so as to stir the molten iron and oxidize the non-petroleum carbonaceous material mainly into CO, simultaneously blowing oxygen into said space over the molten iron so as to oxidize the CO gas to CO_2, the amount of oxygen increasing as the amount of molten iron increases, heating the charged iron scrap to melt with heat generated through the oxidation, utilizing exhaust gas of a high temperature for preheating the iron scrap to be charged, and when the amount of molten iron attains a first predetermined level, tapping off the molten iron until the amount thereof decreases to a second predetermined level necessary for a subsequent cycle of operation, thereafter repeating the above steps.

4,605,438

APPARATUS AND METHOD FOR FORMING A WEAR-RESISTANT METAL COMPOSITION

Earl K. Keith, Clute; William E. Mercer, II, Brazoria, and Clarence R. Dick, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1985, Ser. No. 749,855
Int. Cl.[4] C22B *21/00, 26/22;* F27B *13/00*
U.S. Cl. 75—67 A 10 Claims

1. An apparatus for forming a wear-resistant magnesium or magnesium alloy, the apparatus includes:

a vessel for containing a molten magnesium or magnesium alloy metal composition, the vessel includes a cover having an opening therein;

means for heating the vessel to melt the magnesium composition and to keep the magnesium composition in a molten state, the heater means is positioned external to the vessel and the vessel includes an inert atmosphere above the surface of the molten magnesium composition;

a pump having a suction side and a discharge side, the pump is mounted on the vessel, and it is suspended in the vessel below the surface of the molten metal;

the pump includes a feed tube, one end of the feed tube connects into the suction side of the pump, the opposite end of the feed tube defines an open end suitable for receiving a metal additive, the open end is positioned below the vessel cover, the feed tube has at least one suction opening therein located between the ends of the tube, and the feed tube is positioned such that part of the suction opening lies above the surface of the molten magnesium composition and part of it lies below the magnesium surface;

means for stirring the molten magnesium composition, the stirring means is mounted on the vessel and it is suspended in the vessel below the surface of the molten magnesium;

means for feeding the solid material into the open end of the feed tube, the feeder means is positioned above the vessel;

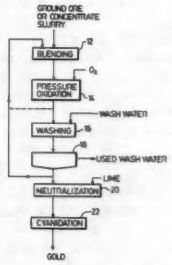
wherein, the suction action of the pump creates a vortex at the surface of the molten magnesium composition, the vortex pulls the molten magnesium through the suction opening in the feed tube, which causes the molten magnesium to mix with the metal additive, and the mixture is discharged into the vessel through the discharge side of the pump.

4,605,439

RECOVERY OF GOLD FROM REFRACTORY AURIFEROUS IRON-CONTAINING SULPHIDIC MATERIAL

Donald R. Weir, Fort Saskatchewan, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Mar. 4, 1985, Ser. No. 708,203
Claims priority, application Canada, Sep. 27, 1984, 464182
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—118 R 7 Claims



1. A process for the recovery of gold from refractory auriferous iron-containing sulphidic material comprising providing an aqueous feed slurry of fresh feed material and oxidized solids from a subsequent pressure oxidation step, said feed slurry having a pulp density in the range of from about 30 to about 60% by weight, subjecting the slurry to pressure oxidation at a temperature of from about 120° to about 250° C. under a total pressure of from about 360 to about 6000 kPa to produce a slurry of oxidized solids, recycling a portion of the oxidized solids to the feed slurry, and recovering gold from the remaining oxidized solids.

4,605,440

BORON-CARBIDE-ALUMINUM AND BORON-CARBIDE-REACTIVE METAL CERMETS

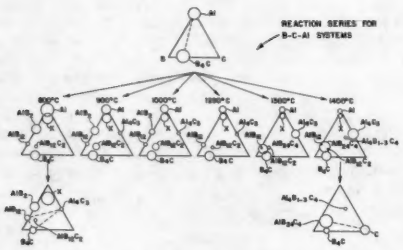
Danny C. Halverson, Manteca, Calif.; Aleksander J. Pyzik, and Ilhan A. Aksay, both of Seattle, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 6, 1985, Ser. No. 730,528
Int. Cl.[4] C22C *29/04*
U.S. Cl. 75—238 42 Claims

1. A composition of matter, comprising a boron-carbide-aluminum composite with a tailored microstructure having at least four of any of the following phases:

(a) AlB_2,

(b) α-AlB_{12},
(c) $AlB_{12}C_2$,
(d) Al_4C_3,
(e) $AlB_{24}C_4$,
(f) $Al_4B_{1-3}C_4$,



(g) a phase containing boron, carbon and aluminum and exhibiting an X-ray diffraction pattern shown in Table I,
(h) B_4C, and
(i) an aluminum phase, homogeneously distributed in the composite.

4,605,441

INK COMPOSITION FOR INDICATING PROGRESS AND COMPLETION OF VULCANIZATION OF RUBBER PRODUCTS

Yoshiaki Masuda, Hirakata; Hidetoshi Fukuo, Takarazuka, and Masaji Yamamoto, Amagasaki, all of Japan, assignors to Sakura Color Products Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 419,443, Sep. 17, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 643,452
Claims priority, application Japan, Sep. 24, 1981, 56-151875
Int. Cl.[4] C09D *11/00*
U.S. Cl. 106—21 **10 Claims**

1. An ink composition for indicating progress and completion of vulcanization of rubber articles comprising, per 100 parts by weight of the composition,

(i) 0.01 to 10 parts by weight of at least one methine dye,
(ii) 1 to 40 parts by weight of at least one member selected from the group consisting of rosin, rosin derivative, petroleum resin, phenol resin, xylene resin, alkyd resin, cumarone-indene resin, acrylic resin, epoxy resin, ketone resin and styrene-maleic acid resin,
(iii) 0.5 to 50 parts by weight of at least one high molecular weight component selected from the group consisting of cellulose resin, polyvinyl butyral, vinyl chloride-vinyl acetate copolymer, ethylene-vinyl acetate copolymer, polyamide, synthetic rubber and natural rubber,
(iv) 30 to 80 parts by weight of at least one organic solvent capable of dissolving the components (ii) and (iii), and
(v) chlorophthalic anhydrides and bromophthalic anhydrides.

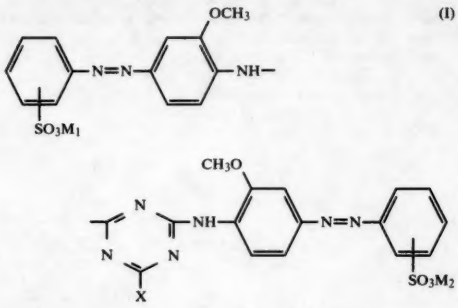
4,605,442

AQUEOUS INK COMPOSITION

Hideo Kawashita, Ibaraki; Takuo Ikeda, Yawata, and Sanae Sakaguchi, Nishinomiya, all of Japan, assignors to Taoka Chemical Company, Limited, Osaka, Japan

Filed Jun. 7, 1985, Ser. No. 742,275
Claims priority, application Japan, Jun. 14, 1984, 59-123290
Int. Cl.[4] C09D *11/02*
U.S. Cl. 106—22 **10 Claims**

1. An aqueous ink composition comprising a dyestuff, a wetting agent and water, characterized in that said dyestuff is a compound of the formula:



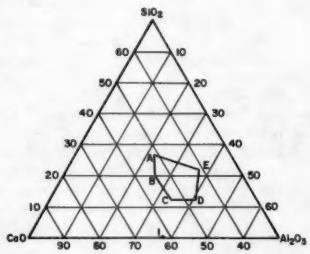
wherein M_1 and M_2 are, the same or different, each a hydrogen atom, an alkali metal atom, an ammonium group or an organic ammonium group and X is an alkylamine or alkoxyalkylamine residue having 6 to 18 carbon atoms.

4,605,443

CAO-AL_2O_3-SIO_2 GLASS HYDRAULIC CEMENTS

John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,355
Int. Cl.[4] C04B *7/32*
U.S. Cl. 106—104 **4 Claims**



1. A hydraulic cement comprising a glass consisting essentially of a composition included within area ABCDEA of FIG. 1.

4,605,444

PROCESSES FOR PREPARING CASEINATES

Werner Wiedmann, and Christian Millauer, both of Stuttgart, Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,160
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340116
Int. Cl.[4] C08L *89/00;* **B28B** *3/20*
U.S. Cl. 106—138 **9 Claims**

1. In a process for the preparation of caseinates wherein, casein, water, and at least one compound selected from lyes and basic salts and water are fed to a baking extruding device with a product being formed under increased pressure and increased temperature and being expanded after discharge from the extruding device, the process comprises providing a twin-screw extruder with rotation in the same direction and having a product feed zone, a plasticizing zone and a discharge zone, feeding single components separately into said product feed zone to prepare a product mixture, maintaining a temperature in the plasticizing zone of greater than 100° C. by subject-

ing said mixture to return elements, maintaining a temperature in the range of 110° to 180° C. in the discharge zone and maintaining a residence time for the product mixture in the plasticizing zone of 0.5 to 1.5 sec.

4,605,445

UNFORTIFIED LIQUID PAPER SIZING COMPOSITION AND METHOD OF PREPARATION

Steven Abell, and Thomas L. Peltier, both of Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 8, 1985, Ser. No. 709,625

Int. Cl.[4] C08J *3/02*; D21D *3/00*

U.S. Cl. 106—236 **23 Claims**

1. A rosin paper sizing composition comprising a homogeneous aqueous liquid which is fully miscible with water at 5° C., on a solids basis said composition containing between about 15% and about 75% by weight of an alkali metal soap of a condensation product of rosin and aldehyde, and between about 85% and 25% by weight urea.

4,605,446

PROCESS FOR PREPARING ORGANOSILICON HIGH CONDENSATION PRODUCTS

Osamu Isozaki, Yokohama, Japan, assignor to Kansai Paint Company, Limited, Japan

Continuation of Ser. No. 556,954, Dec. 1, 1983, abandoned. This application Sep. 16, 1985, Ser. No. 777,551

Int. Cl.[4] C09K *3/00*; C08G *77/04*

U.S. Cl. 106—287.12 **7 Claims**

1. A process for preparing an organosilicon high condensation product having no silanol group in the terminal of the molecule the process comprising the two steps of (i) hydrolyzing a mixture of 5 to 95% by weight of an organosilicon compound represented by the formula (A)

wherein R is C_1–C_4 alkyl and 5 to 95% by weight of an organosilicon compound represented by the formula (B)

$$R'Si(OR)_3$$

wherein R' is methyl, ethyl or phenyl and R is C_1–C_4 alkyl in the presence of an acid catalyst at a pH of less than 6 at 20° C. to 10° C. for 0.5 to 10 hours and with the addition of 0.2 to 2 moles of water per mole of the RO group bonded to the Si group, and (ii) causing condensation reaction for 0.5 to 10 hours by adding an alkaline material to the reactin product to adjust its pH to 7 to 8.5.

4,605,447

METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

Stanley D. Brotherton, Forest Row; Audrey Gill, Horley, and Michael J. King, Red Hill, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,285

Claims priority, application United Kingdom, May 16, 1983, 8313477

Int. Cl.[4] H01L *21/324, 21/26*

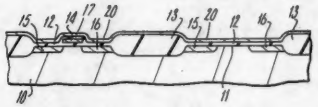
U.S. Cl. 148—1.5 **26 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of

forming an insulating layer at a major surface of a semiconductor body,

covering said insulating layer by an additional layer of polycrystalline silicon,

performing a plasma and heating treatment to reduce the density of charge carrier traps adjacent the interface of said insulating layer and said semiconductor body, said



insulating layer being protected by said additional layer from direct bombardment by said plasma, and

removing said additional layer from at least most areas of said insulating layer following said plasma and heating treatment.

4,605,448

ALUMINUM ALLOY FORMING SHEET AND METHOD FOR PRODUCING THE SAME

Yoshio Baba, and Shin Tsuchida, both of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,536

Claims priority, application Japan, Mar. 2, 1981, 56-028434

Int. Cl.[4] C22F *1/04*

U.S. Cl. 148—11.5 A **11 Claims**

1. A method for producing an aluminum alloy forming sheet suitable for use in manufacturing both can body parts and can ends, said method comprising the steps of:

(1) heating an aluminum alloy in the form of a cast ingot consisting essentially of 0.30 to 1.50 wt. % of Mn, 0.50 to 1.25 wt. % of Mg, 0.52 to 1.00 wt. % of Si and the balance being Al and incidental impurities at a temperature of at least 570° C. for a period of at least 3 hours to homogenize said aluminum alloy;

(2) then hot rolling the homogenized alloy;

(3) then heating the hot-rolled alloy at a temperature in the range of 540° C. to 600° C. for a period of not more than 10 minutes;

(4) then rapidly cooling the heated alloy to a temperature not exceeding 100° C.; and

(5) final cold rolling the cooled alloy to a rolling reduction of at least 50% whereby to form said aluminum alloy forming sheet.

4,605,449

PROCESS FOR PRODUCING A ROLLED STEEL PRODUCT HAVING HIGH WELDABILITY, A HIGH YIELD STRENGTH AND A GOOD NOTCH IMPACT TOUGHNESS AT VERY LOW TEMPERATURES

Arthur Schummer; Jean de la Hamette; Guy Lessel; Jean-Paul Beck, all of Esch, and Armand Frantz, Luxembourg, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 265,070, May 19, 1981, abandoned. This application Jan. 28, 1985, Ser. No. 695,386

Int. Cl.[4] C21D *7/14, 9/52*

U.S. Cl. 148—12 B **5 Claims**

1. A process for producing rolled bodies of steel having a high yield strength, high energy absorption for the Charpy V impact test at very low temperatures and good weldability, especially concrete reinforcement bars, comprising the steps of:

forming a billet of a steel alloy essentially consisting of carbon in a concentration of less than 0.20% C, manganese, in a concentration MN, silicon in a concentration up to about 0.5%, molybdenum and vanadium in concentrations up to 0.3%, aluminum in a concentration of 0.03 to 0.3% and niobium in a concentration of NB of up to 0.3%, the balance iron;

heating said billet in a furnace to a control temperature T1 of 1000° C.±100° C. prior to rolling;

rolling the heated billet in a multiplicity of rolling passes to a bar of a diameter D;

cooling the billet prior to the last three rolling passes to a temperature corresponding to the transformation point Ar3;

cooling said billet following rolling by forced cooling throughout its cross section to a temperature below the recrystallization temperature of the alloy; and

controlling the temperature T1 prior to rolling, the temperature T2 which is 800° C.±75° C. during rolling, the temperature T3 which is 650° C.±50° C. subsequent to rolling and said concentrations in accordance with the relationships:

$$LE=1035+510C\pm192MN+2270NB-0.21T1-0.-4272-0.4873-3.51D$$

and

$$KCV=2202-2066C+23.20MN-2064NB-0.77T1--1.24T2-0.23T3-1.98D$$

where LE is a high elastic limit in MPa and is at least 450 MPa and KCV is the energy absorption in Joule and is at least 35 Joule for a Charpy V impact test at −120° C.

4,605,450

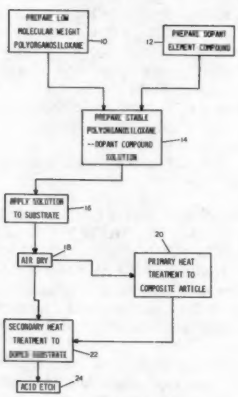
PROCESS FOR FORMING A DOPED OXIDE FILM AND DOPED SEMICONDUCTOR

Ian M. Thomas, Temperance, Mich., and James J. Tillman, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 347,834, Feb. 11, 1982, Pat. No. 4,571,366. This application Jul. 17, 1985, Ser. No. 755,864

Int. Cl.⁴ H01L *21/385*

U.S. Cl. 148—188 **31 Claims**



31. A process for doping a semiconductor substrate material comprising:

a. combining a silicon tetra-alkoxide of the formula SiX_4 wherein X is OR, wherein R is an alkyl group of one to six carbon atoms, with less than a stoichiometric amount of water and a reactive dopant source compound containing a dopant element selected from a member of the group consisting of B, As, Sb and P, in the presence of an acid hydrolysis catalyst, to prepare a solution of a solvent soluble, further curable organosiloxane polymer reaction product;

b. admixing with the reaction product a sufficient amount of an organic epoxide to provide the reaction product solution with a pH of about 5–7;

c. forming a thin layer of said reaction product on said substrate material; and

d. heating said reaction product layer coated substrate for a time sufficient and at a temperature sufficient to diffuse said dopant into said substrate material.

4,605,451

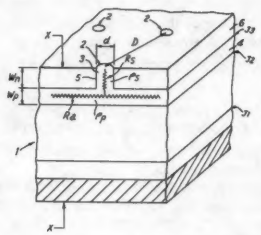
PROCESS FOR MAKING THYRISTOR DEVICES

John M. Garrett, Chippenham, England, assignor to Westinghouse Brake and Signal Company Limited, United Kingdom

Filed Aug. 8, 1984, Ser. No. 638,812

Int. Cl.⁴ H01L *21/383*

U.S. Cl. 148—191 **2 Claims**



1. In a process for producing a thyristor device having a semiconductor body comprising a plurality of superimposed layers of alternating conductivity type in which a controlling base region is produced by diffusing into a surface of said semicondutor body a p-dopant from a p-dopant source to a predetermined depth, wherein the improvement comprises:

removing said p-dopant source; and

continuing said diffusion process in the absence of said p-dopant source for a time sufficient to simultaneously drive said p-dopant in said body further into said body to a depth sufficient to define said controlling base layer and to out-diffuse said p-dopant in said body from said surface to provide a graduated dopant concentration profile in said controlling base region having a maximum value at approximately the midpoint of said controlling base region.

4,605,452

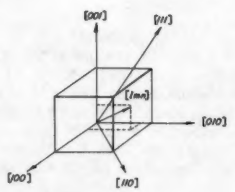
SINGLE CRYSTAL ARTICLES HAVING CONTROLLED SECONDARY CRYSTALLOGRAPHIC ORIENTATION

Anthony E. Gemma, Middletown, and James A. Dierberger, Hebron, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1981, Ser. No. 330,757

Int. Cl.⁴ C22C *19/05*

U.S. Cl. 148—404 **11 Claims**



1. A single crystal article with orthogonal x, y, and z axes, made of a face centered cubic crystal structure metal, having a [001] crystal axis aligned within at least about 20 degrees of the z axis, characterized by a [110] crystal axis of the metal aligned

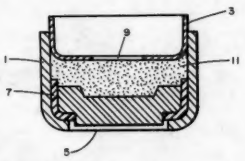
with a tangent to the surface of the article in a region which is prone to thermal fatigue cracks which run in the z axis direction.

4,605,453

FIRING CAP COMPOSITION CONTAINING LEAD STYPHNATE

Robert J. Spear, Flemington, and Lance D. Redman, Macedon, both of Australia, assignors to The Commonwealth of Australia, Australia

Filed Oct. 1, 1985, Ser. No. 782,696
Int. Cl.[4] C06B *41/02*
U.S. Cl. 149—24 **11 Claims**



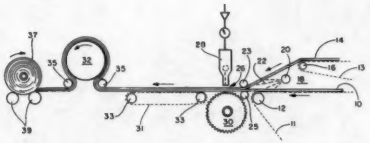
1. A conducting composition suitable for use in a firing cap, comprising normal lead styphnate which has a mean particle size not less than 55 microns, in admixture with carbon black which has a mean aggregate size between 5 microns and about 15 microns.

4,605,454

METHOD OF ULTRASONICALLY BONDING NONWOVEN WEBS

John J. Sayovitz, Cobb County; Kenneth J. Mitchell, Cherokee County, and Michael P. Mathis, Cobb County, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 413,917, Sep. 1, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 693,030
Int. Cl.[4] B32B *31/16*
U.S. Cl. 156—73.1 **6 Claims**



1. A method of forming a composite nonwoven web material having a basis weight in the range of from about 1.5 oz/yd^2 to 9.0 oz/yd^2 from component layers containing thermoplastic fibers, each having a basis weight in the range of from about 0.5 oz/yd^2 to 3.0 oz/yd^2 comprising the steps of:

(a) directing the component layers to a separation zone;

(b) applying water in the amount of from about 5% to 25% based on the weight of the combined layers as a mist or spray between component layers;

(c) combining the component layers;

(d) passing the combination through a sonic bonder operating within the range of up to about 40,000 cps against a patterned anvil to produce a corresponding pattern of thermal bond areas over about 3% to 25% of the surface area of the combination; and

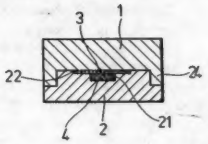
(e) drying said sonically bonded combination.

4,605,455

METHOD OF MANUFACTURING SHOES

An-Cheng Lai, No. 133, Chen Cheng Street, Su-Lin Town, Taipei District, Taiwan

Filed Oct. 10, 1984, Ser. No. 659,284
Int. Cl.[4] B32B *5/28;* B29C *39/18;* A43D *65/00, 95/14*
U.S. Cl. 156—78 **7 Claims**



1. A method of fabricating a shoe having a foamed outsole and an insole bonded to the outsole comprising:

(a) preparing a mold having an upper mold piece and a lower mold piece, the lower mold piece having a deeper mold cavity for shaping the outsole and a shallow cavity for receiving the insole, the shallow cavity being located above the deeper mold cavity;

(b) introducing an amount of foamable resin composition into the deeper cavity sufficient to produce an outsole;

(c) cutting a piece of insole from a sheet of insole material and placing it in the shallow cavity above the resin composition; and

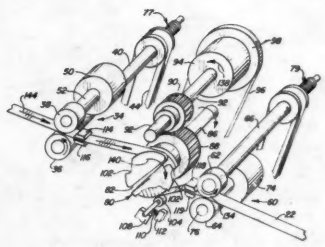
(d) heating the upper and lower mold pieces to cause the composition in the deeper cavity to foam and be formed into a foamed outsole and to cause the insole to be bonded to the outsole.

4,605,456

METHOD AND APPARATUS FOR FEEDING AND TENSIONING STRAP IN A STRAPPING MACHINE

James R. Annis, Jr., Palatine, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed May 2, 1985, Ser. No. 729,624
Int. Cl.[4] B65B *13/22, 13/24*
U.S. Cl. 156—157 **13 Claims**



1. A strap feeding and tensioning assembly for a strapping machine in which a length of strap can be formed into a loop about an object and in which there are means for gripping the end of the strap in the loop, said assembly comprising:

(a) feeding means on said machine for feeding a length of said strap from which said loop is formed around said object;

(b) take-up means for taking up slack in said strap loop, said take-up means being mounted on said machine in spaced relation to said feeding means;

(c) a high tension member mounted for rotation on said machine generally between said feeding means and said take-up means, said high tension member defining a slot for accommodating said strap extending between said feeding means and said take-up means, said high tension

member defining a strap engaging surface on the periphery of said high tension member at an end of said slot; and

(d) means for rotating said high tension member to engage and pull said strap for applying high tension to said strap loop.

12. A method for feeding and tensioning strap in a strapping machine in which a length of strap is guided in a guideway to form a loop about an object and in which the strap end is gripped to permit tensioning of the loop, said feeding and tensioning method comprising the steps of:

(a) locating said strap in a path between a rotating feed wheel and an adjacent rotatable first pinch roll, between a rotating take-up wheel and an adjacent rotatable second pinch roll, and in a slot defined in a rotatable high tension member that is disposed generally between said feed wheel and said take-up wheel and that defines a strap engaging surface on the periphery of the high tension member at an end of the slot;

(b) effecting relative movement between said rotating feed wheel and first pinch roll to press said strap between said feed wheel and said first pinch roll for feeding a length of said strap in said guideway to form said loop from said length of strap;

(c) effecting relative movement between said rotating feed wheel and said first pinch roll to a second position for releasing the pressure on said strap from said feed wheel and said first pinch roll;

(d) gripping the end of said strap in said loop before, during, or after step (c);

(e) while continuing step (d), effecting relative movement between said rotating take-up wheel and said second pinch roll to press said strap between said take-up wheel and said second pinch roll for taking up slack in said strap; and

(f) while continuing step (d), rotating said high tension member to engage and pull said strap for applying high tension to said strap loop.

4,605,457

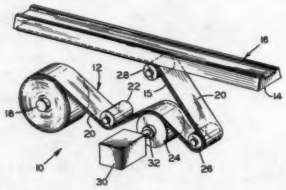
TAPE TENSION CONTROL SYSTEM

Robert R. Guy, North Royalton, Ohio, assignor to Lof Plastics Inc., Troy, Mich.

Filed May 8, 1984, Ser. No. 608,250

Int. Cl.[4] B32B *31/00*; B65H *23/10, 59/14, 59/18*

U.S. Cl. 156—160 **3 Claims**



1. In a method of precisely tensioning a pressure sensitive adhesive tape and applying it to a substrate, the steps comprising:

(a) guiding the pressure sensitive adhesive face of a portion of the tape over a smooth peripheral surface of a rotating roll wherein the adhesive face of the tape temporarily sticks to the smooth peripheral surface of the roll and wherein the portion of the tape being guided over the rotating roll is only contacted on the adhesive face such that the opposite face thereof is exposed and uncontacted;

(b) applying the adhesive face of the tape to the face of a substrate; and

(c) variably braking the rotation of the rotary roll to induce a stretch in the tape extending between the substrate and the rotating roll to coordinate with any stretch in the substrate whereby the tape and substrate stretch and shrink in unison.

4,605,458

METHOD OF PRESSURE BONDING COMPOSITE MATERIALS

Masao Nakamura, Toyohashi, Japan, assignor to Taiho Kogyo Co., Ltd., Toyota, Japan

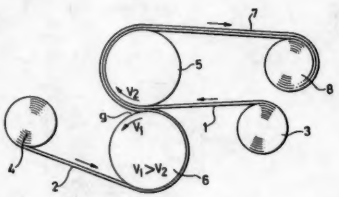
PCT No. PCT/JP83/00378, § 371 Date Jun. 25, 1984, § 102(e) Date Jun. 25, 1984, PCT Pub. No. WO84/01733, PCT Pub. Date May 10, 1984

PCT Filed Oct. 25, 1983, Ser. No. 626,835

Claims priority, application Japan, Oct. 25, 1982, 57-187300; May 23, 1983, 58-90178

Int. Cl.[4] B32B *31/08*

U.S. Cl. 156—164 **8 Claims**



1. A method of pressure bonding composite material comprising passing a pair of strips through a nip defined between a pair of counterrotating abutting rolls and therewith bonding them together under pressure into a composite material strip, wherein the improvement comprises the steps of

wrapping at least one of the following:

(1) the composite strip, which has passed through the nip, around one of said pair of abutting rolls, and

(2) one of said pair of strips, which is to be introduced into said nip, around the other of said pair of abutting rolls; and

simultaneously driving said abutting pair of rolls at different peripheral speeds.

4,605,459

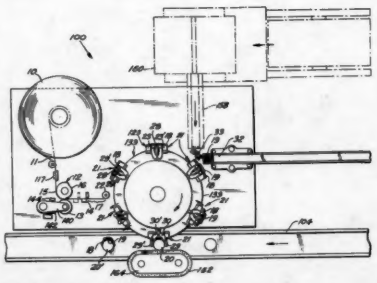
LITERATURE APPLYING MACHINE AND METHOD

Helmut Voltmer, Park Ridge, and Alfred F. Schwenzer, Totowa, both of N.J., assignors to New Jersey Machine Inc., Fairfield, N.J.

Filed Feb. 3, 1984, Ser. No. 576,730

Int. Cl.[4] B65B *19/34*

U.S. Cl. 156—215 **15 Claims**



1. A banding system, for securing literature to containers, the banding system comprising in combination;

a supply of banding material including an adhesive for attachment to said containers;

metering means for metering portions of said banding material from said supply to provide a band segment;

a dispenser of literature;

receiving means for receiving a band segment from said

metering means and subsequently receiving said literature from said dispenser;

coupling means for coupling said receiving means to a container; and wherein

said receiving means includes dislodging means for dislodging said literature and said band segment upon said container, and

a set of spring loaded suction cups one of which holds said band segment by vacuum force and a second of which holds said literature by vacuum force, and an articulated arm assembly for placing said literature and said band segment upon a container at said third station, the vacuum forces of said cups being terminated upon the placement of the literature and the band segment upon the container.

12. A method of securing literature to a container and comprising steps of:

severing an imperforate band segment at a predetermined length including end portions, from a source of banding material having a thermo-sensitive adhesive everywhere on one face thereof;

placing the literature against said one face of the band segment in an overlapping area with the end portions of the band segment extending beyond the literature and with a portion of the literature extending beyond the band segment and holding the literature and the band segment together by applying suction to the band segment, but not the literature in the overlapping area, and to the end portions of the band segment and to the extending portion of the literature;

heating the end portions of the band segment without heatint the mid portion to activate the adhesive on said end portions but not the adhesive on the mid portion; and

pressing the end portions of the band segment against the container with the literature between the band segment and the container.

4,605,460

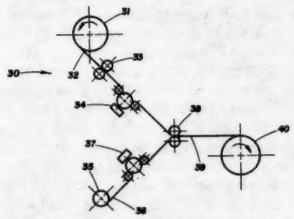
METHOD OF LAMINATING HIGH BARRIER SHRINK FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 538,738, Oct. 3, 1983, Pat. No. 4,542,075. This application Jul. 3, 1985, Ser. No. 752,201

Int. Cl.[4] B32B *27/30, 27/00*

U.S. Cl. 156—229 **7 Claims**



1. A method for making a heat shrinkable, high barrier laminate film comprising:

(a) forming a hot blown, melt oriented high oxygen barrier film;

(b) stretch orienting a base film, the extent of orientation being sufficient such that its ultimate elongation is reduced so as not to substantially exceed that of said barrier film further provided that said barrier film has an ultimate elongation substantially less than that of said base film before orienting and said base film after orienting has a heat shrink tension substantially greater than that of said barrier film; and then

(c) laminating said barrier film to said base film.

4,605,461

METHOD OF TRANSFERRING A RETROREFLECTIVE PATTERN ONTO A FABRIC

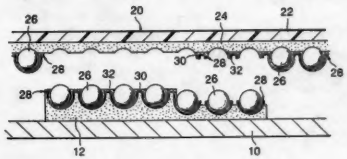
Hisao Ogi, Shiga, Japan, assignor to Ide Idustries Limited, Suzaku, Japan

Filed Dec. 6, 1984, Ser. No. 678,825

Claims priority, application Japan, Dec. 15, 1983, 58-237243

Int. Cl.[4] B44C *1/16, 1/165;* **B32B** *31/00;* **D03D** *3/00*

U.S. Cl. 156—233 **6 Claims**



1. A method of transferring a retroreflective pattern onto a fabric, which comprises the steps of: coating a compression bonding adhesive on a surface of the fabric in a predetermined adhesive pattern, superposing on the surface of the fabric so coated with said adhesive a retroreflective pattern transfer sheet comprising a mass of transparent fine glass spheres deposited in spaced apart relation on a base film through an intermediary of a temporary holding adhesive so as to allow the fine spheres to be individually more than half exposed and a reflective film layer composed of a colored transparent film and a deposited metal film, which reflective film layer is laid over the exposed surface of said mass of transparent fine glass spheres and over the surface of the temporary holding adhesive present between individual adjacent glass spheres, with the reflective film side of said retroreflective pattern transfer sheet placed in face-to-face relation with the adhesive coated side of the fabric, applying pressure to the retroreflective pattern transfer sheet superposed on the fabric from the base film, thereby bringing the retroreflective pattern transfer sheet opposed to the pattern coat of the compression bonding adhesive into bond with the surface of the fabric through the compression bonding adhesive, applying a peel force to the retroreflective pattern transfer sheet so that the reflective film layer is scissioned at a gap defined by individual transparent fine glass spheres present along a borderline between a first portion of the transfer sheet which is in bond with the fabric through the compression bonding adhesive and a second portion of the transfer sheet including the area of the color transparent film and metal film between the spheres which is not in bond with the fabric and so that said portion of the transfer sheet not in bond with the fabric is stripped off, whilst at least the temporary holding adhesive and the base film are stripped off together from said portion in bond with the fabric of the transfer sheet so that a mass of transparent fine glass spheres, less than half exposed, and the associated reflective film layer at least are retained as retroreflective pattern means on the surface of the fabric the thickness of the adhesive coat being more than sufficient to fill the gaps between individual adjacent transparent fine glass spheres.

4,605,462

METHOD OF ATTACHING A SHEETLIKE OBJECT, E.G., A LABEL, TO A HOLLOW BODY OF PLASTICS

Alwin Lehner, Hard, Austria, assignor to Soplar SA, Altstätten, Switzerland

Continuation of Ser. No. 511,562, Jul. 6, 1983, abandoned. This application Jan. 14, 1985, Ser. No. 691,374

Claims priority, application Switzerland, Jul. 6, 1982, 4103/82

Int. Cl.[4] B29C *49/24*

U.S. Cl. 156—245 **9 Claims**

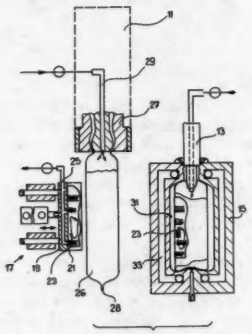
1. Method of blow-molding a hollow body of plastic material, especially of vessel or bottle shape, and applying a sheet-

like element (23) forming a label on the hollow body (26') as the hollow body is being made,

comprising the steps of

hot-extruding a hollow element from an extrusion nozzle (27);

applying the label to the hollow element as it is being extruded and while the hollow element is suspended from the extrusion nozzle, by pressing at least a portion of the label against the hot surface of the hollow element upon the hollow element being extruded by, and while still suspended from the extrusion nozzle in advance of blow-molding, while free of the blow mold and while still hot consequent to hot-extrusion, to preliminarily adhere the sheet-like element (23) on the hollow element;



then introducing the extruded hollow element, with the sheet-like element preliminarily and at least in part adhered thereto, into a blow mold (15) between the outer surface of the hollow element and the inner wall of the blow mold;

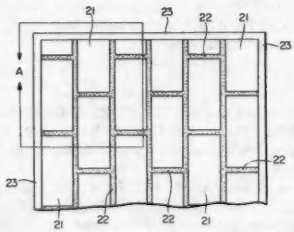
and then introducing pressurized gas into the blow mold to expand the hollow element, form the hollow element into the shape of the body and to finally adhere the sheet-like element to the hollow element over the entire surface of the sheet-like element as the sheet-like element and the plastic material are being pressed against the walls of the mold by blow-molding the hollow element.

4,605,463

PROCESS OF FORMING ORNAMENTAL JOINTS

Susumu Kidokoro, and Eiichi Tajima, both of Tokyo, Japan, assignors to Tajima Oyo Kako Kabushiki Kaisha, Chiyoda, Japan

Filed Oct. 9, 1984, Ser. No. 658,596
Claims priority, application Japan, Nov. 7, 1983, 58-208568
Int. Cl.[4] B32B *31/18*
U.S. Cl. 156—247 **2 Claims**



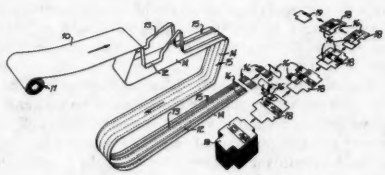
1. A process of forming ornamental joints which comprises sticking a sheet flooring material onto a floor base, thereafter drawing one desirably outlined standard line on said sheet flooring material, sticking a tape like material covering the surface of the standard line drawn on the sheet flooring material, said tape like material being transparent and wider than a groove for forming a joint, forming cuts on said tape like material and the sheet flooring material by sliding a cutter with a pair of cutting blades, disposed leaving a space corresponding to the joint width therebetween, on the tape like material with one cutting blade along said standard line which can be seen through this tape like material to thereby form two parallel cuts on said flooring material, forming the groove for forming the joint by stripping the sheet flooring material between these cuts and the tape like material stuck on its surface, thereby forming a masking by said tape like material remaining on its both edge sides, and charging said groove with a joint material under the state where said masking has been provided.

4,605,464

METHOD AND MACHINE FOR PRODUCING COMPLANCE CARRIER CARTONS

Julian B. Slevin, 221 Moylan Ave., Moylan, Pa. 19065

Filed May 25, 1983, Ser. No. 497,916
Int. Cl.[4] B32B *31/08, 31/18*
U.S. Cl. 156—253 **6 Claims**



1. Apparatus for producing cell forming inserts for bottle carrier blanks from a continuous web of paperboard unwound from a roll comprising:

support means for supporting the roll of paperboard for free rotation about the axis of the roll;

a tensioning device receiving the web unwound from the roll and including a slide plate over which the web moves and at least one pressure roll for adjustably pressing the web against said slide plate so that a prescribed amount of force is required to pull the web through said tensioning device;

a slitter mechanism receiving the web from said tensioning device, said slitter mechanism including a backup roll over which the web passes, a drive shaft rotatably mounted for rotation about an axis normal to the longitudinal centerline of the web, a pair of spaced apart circular slitter knives mounted on said drive shaft for rotation therewith to engage the web and cut a continuous strip from opposite edges of the web, and a drive roll mounted on said shaft between said knives to engage the web moving over said backup roll so that said drive roll is rotated by the web moving thereby to rotate said slitting knives;

web guide means receiving the web from said slitter mechanism and including a shifting roll for shifting the web away from the strips cut therefrom;

strip guide means receiving the strips cut from the web, said strip guide means including a first pair of flanged rollers located in alignment with the strips so that each strip passes around one of said first rollers, a second pair of flanged rollers spaced from said first pair of rollers and located in alignment with the strips so that each strip passes around one of said second rollers, a pair of pivot arms pivoted between said first and second rollers, a flanged takeup roller rotatably mounted on each of said pivot arms so that one of said takeup rollers engages each of the strips between said first and second rollers and the weight of said pivot arm and takeup roller is exerted on

the strip to keep the strip taut, a pair of strip deflectors engaging the strips after passage around said second rollers to shift the strips inboard of the edges of the web passing through said web guide means, and a pair of flanged positioning rollers spaced inboard of the edges of the web and located above the web around which the strips shifted by said strip deflectors pass to locate the strips a prescribed distance inboard of the edges thereof;

a second backup roll rotatably mounted below said flanged positioning rolls and over which the web from said web guide means passes;

a pair of spaced apart pressure rollers mounted adjacent said second backup roll in alignment with the strips from said positioning rolls and under which the strips pass to press the strips against the web at the prescribed distances inboard of the edges thereof;

a pair of glue applicators positioned between said positioning rollers and said pressure rollers to apply an adhesive to that side of the strips which will lie against the web so that the pressing of the strips against the web by said pressure rollers adhesively attaches the strips to the web; and

a pair of driven rolls drivingly engaging the web with the strips adhesively attached thereto to pull the web and strips under tension from said tensioning device through said slitter mechanism, said web guide means, said strip guide means and between said second backup roll and said pressure rollers.

4,605,465

UV AND THERMALLY CURABLE, THERMOPLASTIC-CONTAINING COMPOSITIONS

Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

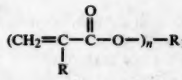
Continuation of Ser. No. 526,636, Aug. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 371,684, Apr. 26, 1982, abandoned. This application Oct. 4, 1984, Ser. No. 657,607

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—273.3 **10 Claims**

1. A process for adhering two substrates which consists of applying to at least one of said substrates an adhesive composition consisting essentially of

(1) a liquid, ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is at least 2,

(2) a thermal initiator for (1) selected from the group consisting of azo compounds, thiurams, organic peroxides and mixtures thereof,

(3) a photoinitiator for (1) selected from the group consisting of aldehyde and ketone carbonyl compounds having at least one aromatic nucleus attached directly to the

group, benzoin alkyl ethers, diethoxyacetophenone and 2,2-dimethoxy-2-phenylacetophenone,

(4) a thermoplastic material, and

(5) a non-polymerizable plasticizer for (4), exposing said composition in air to UV radiation having an intensity in the range 0.0004 to 60.0 watts/cm^2 in the 200–400 nanometer region for a time sufficient to partially cure the adhesive in situ, contacting the substrates with the partially cured adhesive therebetween and, thereafter, heating the composition to a temperature in the range 80°–200° C. for a time sufficient to obtain a fully cured solid adhesive.

4,605,466

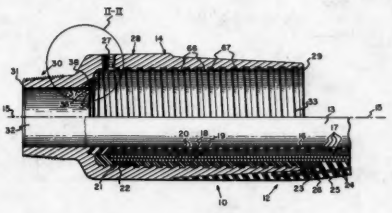
HOSE COUPLING METHOD

George W. Eisenzimmer, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 401,797, Jul. 26, 1982, abandoned, which is a division of Ser. No. 210,944, Nov. 28, 1980, Pat. No. 4,353,581. This application Feb. 21, 1984, Ser. No. 581,636

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—293 **3 Claims**



1. A method of coupling hose for use at working pressures up to 20,000 psi, said hose having an innermost tube of elastomeric material and multiple plies of reinforcing elements to a unitary coupling having a nipple portion integrally joined to a sleeve portion, said nipple portion having a uniform diameter coaxial bore therethrough in communication with an untapered coaxial counterbore of greater dimension extending through said sleeve portion, said coupling further including an annular recess extending toward the nipple portion from the end of the counterbore, said recess having a mean diameter slightly greater than the diameter of the bore through the nipple portion, comprising the steps of:

(a) forming said recess in said coupling to form a radially innermost conical surface one end of which extends to the bore of the nipple and a radially outermost annular surface one end of which extends to the counterbore of the sleeve, the included angle between generator lines which define the radially innermost and outermost surfaces when viewed in an axial cross section of the coupling being from about 20° to about 60°;

(b) providing an uncured hose preform including a radially innermost tube of elastomeric material, multiple plies of reinforcing elements overlying said tube and bound down at an end of said tube, the tube extending axially beyond the reinforcing elements a small amount;

(c) filling the recess of said coupling with uncured elastomeric material which is capable of being adhered to the elastomer material of the tube of said hose preform and the surfaces defining the recess;

(d) inserting the hose preform into the sleeve portion of the coupling and axially forcing the coupling and hose preform together thereby causing intimate contact between the uncured elastomeric material and the end of the innermost tube of the hose preform and all surrounding coupling surfaces;

(e) sealing off the hose preform at the end of the sleeve portion distal the nipple portion of the coupling, thereby creating a void area between the tube and the inner walls of the sleeve portion;

(f) filling the void area with an anchoring material which will fixedly embed the reinforcing elements of the hose therein;

(g) applying a radially outermost cover layer of polymeric material to the hose preform; and

(h) applying heat and pressure to the hose and coupling assembly to cure the hose and securely bond the elastomeric material filling the recess to the innermost tube and

all surrounding coupling surfaces to form a fluid tight seal for sealing against internal pressure within the hose said seal being capable of resisting internal working pressures of up to 20,000 psi.

4,605,467

APPARATUS FOR PRODUCING STEAM HARDENED PRESSEDBOARD

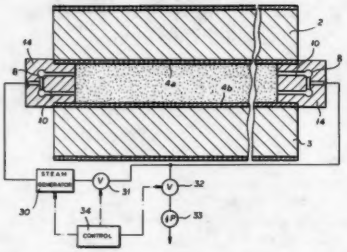
Friedrich Böttger, Haan, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,715

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411590

Int. Cl.[4] B32B *31/26*

U.S. Cl. 156—497 **9 Claims**



1. An apparatus for pressing and steam curing a wood-particle mat to produce a wood-particle board, comprising:

a pair of pressing belts for moving the wood-particle mat along a predetermined path, said belts being arranged with a spacing to define a pressing gap therebetween such that a compression zone and a sizing zone are provided in succession along said path; and

steam injection means extending laterally along each side of said path and including a first channel system bordering said pressing gap along said compression zone for injecting steam into the mat and a second channel system bordering said pressing gap at least along a section of said sizing zone for collecting and discharging steam.

4,605,468

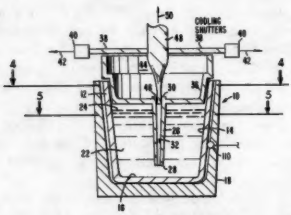
SHAPED CRYSTAL FIBER GROWTH METHOD

Antonio C. Pastor, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 10, 1984, Ser. No. 628,949

Int. Cl.[4] C30B *15/34*

U.S. Cl. 156—608 **4 Claims**



1. A method for pulling a shaped crystalline fiber of a given crystal-forming material from a liquid reservoir of said material comprising the steps of:

providing a liquid reservoir of said material having a top surface and maintaining the temperature of the liquid reservoir above the crystal-forming temperature of said material;

introducing said liquid material into the bottom end of the die having a tubular orifice, said bottom end of the die located below the top surface of the reservoir;

flowing said liquid material to a crystal-forming zone in said orifice, said crystal-forming zone having a cross-section which tapers outward toward the top end of the die and downstream relative to the flow of said liquid material and such that said liquid material is in direct contact with said crystal-forming zone;

providing a thermal gradient along the length of said crystal-forming zone so that a liquid/crystal interface occurs within said crystal-forming zone, the crystalline material at said liquid/crystal interface having an outer edge that forms directly adjacent the inner surface of said die and being shaped thereby; and

continually pulling said crystalline material from the crystal-forming zone to produce said shaped crystalline fiber.

4,605,469

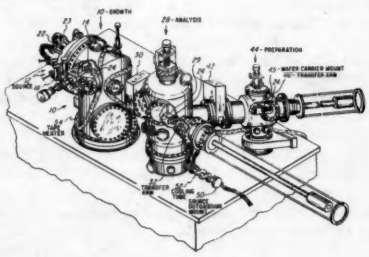
MBE SYSTEM WITH IN-SITU MOUNTING

Hung-Dah Shih, Plano, and Tommy J. Bennett, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 10, 1983, Ser. No. 550,655

Int. Cl.[4] C30B *23/06*

U.S. Cl. 156—610 **24 Claims**



22. A method of epitaxal growth, comprising the steps of:

providing a plurality of wafers, on which molecular beam epitaxial growth is to be performed;

loading said wafers from atmospheric pressure into a first vacuum chamber and evacuating said first vacuum chamber;

holding a substrate holder and a retaining ring in a second vacuum chamber separate from said first vacuum chamber while said wafers are loaded into said first vacuum chamber and said first vacuum chamber is evacuated;

opening a valve to interconnect said first vacuum chamber and said second vacuum chamber;

transferring one of said wafers onto said substrate holder and assembling said retaining ring thereto, said substrate holder and said retaining ring mechanically defining a cavity therebetween having dimensions approximately equal to or slightly greater than those of said wafers, said retaining ring and substrate holder being assembled to hold one of said wafers therebetween;

transferring said substrate holder, wafer, and assembled retaining ring into a growth chamber, said growth chamber being held under ultrahigh vacuum, and performing molecular beam epitaxy in said growth chamber;

transferring said substrate holder, wafer, and assembled retaining ring out of said growth chamber, removing said retaining ring from said substrate holder, and removing said wafer from said substrate holder;

repeating ones of said proceding steps, until a plurality of

wafers have been exposed to epitaxial growth in said growth chamber;

transferring said wafers into said first chamber, while said retaining ring and substrate holder are retained in vacuum apart from said first chamber;

closing a vacuum valve to isolate said first chamber from said second chamber; and

removing said wafers from said first chamber to atmospheric pressure.

4,605,470

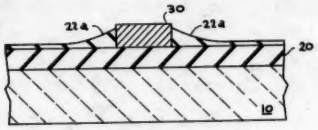
METHOD FOR INTERCONNECTING CONDUCTING LAYERS OF AN INTEGRATED CIRCUIT DEVICE

Peter S. Gwozdz, Cupertino, and Hubert M. Bath, Saratoga, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 10, 1985, Ser. No. 743,205

Int. Cl.[4] B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*

U.S. Cl. 156—643 **39 Claims**



1. An improved method for forming a conductive path through at least one layer of insulating material in an integrated circuit structure comprising a narrow portion and a sloped oversized portion, said method comprising:

(a) forming said sloped oversize portion of said conductive path by defining an opening in a layer of photoresist material applied over said layer of insulating material; and sloping said insulating layer to form said sloped oversized portion of said conductive path; and

(b) forming said narrow portion of said conductive path by etching at least a portion of said insulating layer to expose a selected section of said integrated circuit structure below said insulating layer.

4,605,471

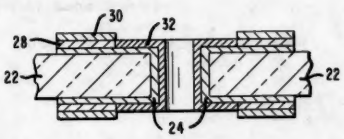
METHOD OF MANUFACTURING PRINTED CIRCUIT BOARDS

Curt E. Mitchell, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 27, 1985, Ser. No. 749,594

Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—645 **6 Claims**



1. In a method of fabricating a printed circuit board having a solder mask applied over at least a portion of the circuit board other than connecting pads and holes therethrough of a prescribed electrical circuit pattern in a conductive material on the circuit, the improvement comprising the steps of:

(a) applying on a portion of the conductive material a thin coating of metallic etch resist composed of a nickel metal which will not flow detrimentally at the temperature of solder used in a subsequent solder operation;

(b) applying a solder resist on the board except the plated-through holes and other connecting sites;

(c) selectively removing the nickel from the plated-through holes and other connecting sites; and

(d) applying a layer of solder to the exposed plated-through holes and other connecting sites.

4,605,472

DRIVE ASSEMBLY FOR CLEANER FOR WIRE-SCREEN OR FELT-BLANKET BELT OF PAPERMAKING APPARATUS

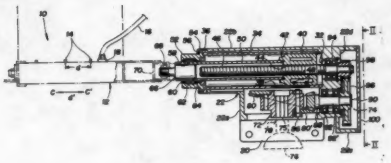
Tooru Nakamura, No. 2263-5, Imaizumi, Fuji City, Shizuoka Prefecture, Japan

Filed Jun. 27, 1984, Ser. No. 624,941

Claims priority, application Japan, Jul. 9, 1983, 58-124976

Int. Cl.[4] D21F *1/32*

U.S. Cl. 162—277 **19 Claims**



1. In a papermaking apparatus having a sheet forming station including an endless belt to forwardly carry a wet web of paper thereon and a shower pipe unit to clean the endless belt by applying streams of liquid to the belt, the shower pipe unit being movable in opposite directions substantially parallel with the direction of width of the belt, a cleaner drive assembly for driving said shower pipe unit alternately in said opposite directions, the cleaner drive assembly comprising:

a stationary housing;

an electric motor having an output shaft rotatable about an axis fixed with respect to said stationary housing;

a pair of sector-shaped driving bevel gears enclosed within said stationary housing and having a common axis of rotation substantially coincident with the axis of rotation of the motor output shaft, the driving bevel gears being substantially congruent in shape to each other about said common axis of rotation thereof and being, when viewed in axial direction of the combination of the gears, substantially symmetric to each other with respect to a diametrical line which passes through said common axis of rotation of the driving bevel gears, said motor output shaft being held in driving engagement with each of said driving bevel gears;

a driven bevel gear having an axis of rotation fixed with respect to said stationary housing and engageable with each of said driving bevel gears on planes which are parallel with each other on the opposite sides of a plane which passes through the axis of rotation of the driven bevel gear, said sector-shaped driving bevel gears being alternately meshable with the driven bevel gear to produce rotary motions in alternately opposite directions about the axis of rotation of the driven bevel gear;

an elongated, externally threaded screw rod which is held against axial movement with respect to said stationary housing and which is rotatable in opposite directions about the center axis thereof with respect to the stationary housing;

intermediate gears intervening between said driven bevel gear and said screw rod and operative to transmit rotation from the driven bevel gear to the screw rod; and

an internally threaded slide member engaging said screw rod and held against rotation about the center axis of the screw rod with respect to said housing structure, the slide member being axially movable in alternately opposite

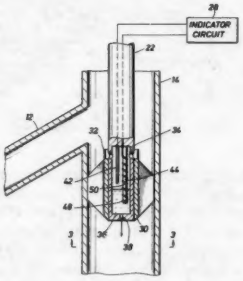
directions on and along the screw rod with respect to the stationary housing as the screw rod is driven for rotation about the center axis thereof with respect to said housing structure, the alternately opposite directions of movement of the slide member being respectively in correspondence with said alternatively opposite directions of rotation of said driven bevel gear, said slide member being connected to and movable with said shower pipe unit for driving the shower pipe unit alternately in said opposite directions thereof.

4,605,473

HYPOCHLORITE ACTIVATED GOLD ELECTRODE AND MEASURING SYSTEM AND METHOD

Lamar R. Dewald, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1985, Ser. No. 793,819
Int. Cl.[4] G01N *27/30, 27/50*
U.S. Cl. 204—1 T **14 Claims**



1. A measuring device for use in measuring hypochlorite concentration from an electrolysis cell forming an electrolyte potentially having hypochlorite therein, the device comprising:

(a) electrolyte container means having an inlet for admitting electrolyte thereto from an electrolysis cell potentially having hypochlorite therein;

(b) an elongate probe;

(c) an exposed reference electrode supported by said probe;

(d) an exposed gold sensing electrode having a specified surface area, the surface area being etched to increase the surface area thereof;

(e) a coating of hypochlorite on said sensing electrode surface area;

(f) circuit means connected to said sensing electrode to measure and indicate hypochlorite concentration of electrolyte from the cell on contacting said electrodes with electrolyte in said container means.

11. A method of measuring hypochlorite concentration in the electrolyte discharged from the electrolysis cell wherein the electrolyte has varying amounts of hypochlorite therein, the method comprising the steps of:

(a) positioning container means subject to filling from the discharge of electrolyte from an electrolysis cell;

(b) positioning a reference electrode in said container means and adapted to be submerged in the electrolyte in said container means;

(c) positioning an exposed gold sensing electrode in said container means to be submerged by the electrolyte in said container means;

(d) conducting measurements utilizing said electrodes in the submerged electrolyte to thereby obtain a measurement indicative of hypochlorite concentration;

(e) and further including the preliminary step of placing a coating of hypochlorite on said sensing electrode.

4,605,474

ALKALINE CYANIDE BATH FOR ELECTROLYTIC DEPOSITION OF COPPER-TIN-ALLOY COATINGS

Gerd Hoffacker, Neue Strasse 74/6, 7070 Schwabisch Gmund, and Willi Müller, Obere Morgen 44, 7345 Deggingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 666,318, Oct. 30, 1984, Pat. No. 4,565,608. This application Aug. 26, 1985, Ser. No. 769,343
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339541
The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.
Int. Cl.[4] C25D *3/58, 3/60*
U.S. Cl. 204—44 **7 Claims**

1. In an alkaline cyanide bath for the electrolytic deposition of bright to brilliant copper-tin alloy coatings, the improvement comprising including in the bath at least one organic material from at least one of the following groups:

(a) fatty acid amidoalkyl dialkylamine oxides of the general formula

$$R_1CO—NH(CH_2)_n—N(R_2)_2\rightarrow O,$$

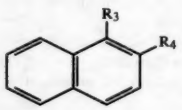
wherein
R_1 is an alkyl group having 11 to 17 carbon atoms,
R_2 is an alkyl group having 1 to 5 carbon atoms, and
n is 1–30

(b) fatty acid amidoalkyl-dialkylamine betaines of the general formula

$$R_1CO—NH(CH_2)_n—\oplus N(R_2)_2—CH_2—COO\ominus,$$

wherein
R_1 is an alkyl group having 11 to 17 carbon atoms,
R_2 is an alkyl group having 1 to 5 carbon atoms, and
n is 1–30, and

(c) ethoxylated naphthols of the general formula



wherein
R_3 is H or $O(CH_2—CH_2O)_mH$,
R_4 is $O(CH_2CH_2O)_mH$ or H
m = 10 to 14
in an amount of 0.05 to 5 g/l.

4,605,475

GAS SEPARATION PROCESS

Daryl L. Roberts, Fremont, and Richard M. Laine, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jan. 28, 1985, Ser. No. 695,440
Int. Cl.[4] C25F *5/00*
U.S. Cl. 204—130 **3 Claims**

1. A continuous process for separating oxygen from gas mixtures containing oxygen comprises:

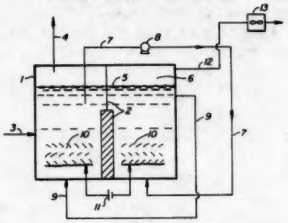
forming a solution consisting essentially of an organic solvent, an electrolyte and an organometallic complex oxygen carrier in which the metal is polyvalent and at a lower valence, the solvent, electrolyte and organometallic complex being chemically compatible,

providing a closed vessel having a central vertical divider separating said vessel into two compartments, the lower portion of said divider being a permeable membrane and the upper portion of said divider being an impermeable sheet, an electrode disposed near the bottom of each of said compartments and a cell so connected to the electrodes that one becomes a cathode and the other an anode,

said membrane being permeable in the sense that it prevents flow of said solution through it from either compartment to the other but provides liquid electrolytic communication between the compartments,

introducing said solution into both compartments of said vessel in amounts such that the upper level of the solution in each compartment intersects the impermeable sheet of the divider,

passing an oxygen containing gas into the cathode compartment of the vessel at a point near its bottom to cause oxygen absorption by said oxygen carrier and withdrawing gas depleted in oxygen from the top of the cathode compartment,



withdrawing solution from the cathode compartment at a point near the upper surface of solution contained in the cathode compartment and introducing the withdrawn solution into the bottom of the anode compartment, to cause oxidation of the metal component of the oxygen carrier and release of absorbed oxygen,

withdrawing gas enriched in oxygen from the top of the anode compartment; and

withdrawing solution from the anode compartment at a point near the upper surface of solution contained in the anode compartment, and introducing the withdrawn solution into the bottom of the cathode compartment to cause reduction of the metal of the oxygen carrier to a lower valence.

4,605,476

RESINOUS BLENDS OF EPOXY AND ACRYLIC RESINS AND THE USE THEREOF IN ELECTRODEPOSITION

Terence J. Hart, Allison Park; Rostyslaw Dowbenko, Gibsonia; Rudolf Maska; Ellor J. Van Buskirk, both of Pittsburgh, and Marvin T. Tetenbaum, Wexford, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 2, 1984, Ser. No. 637,251
Int. Cl.[4] C25D *13/06*
U.S. Cl. 204—181.6 **9 Claims**

1. A method of anionically electrocoating an electrically conductive surface which comprises passing an electric current through the surface serving as an anode, and through a cathode in an electrical circuit with an electrodepositable composition, said composition comprising:

(A) a base-neutralized resinous blend of:

(i) from about 5 to 95 percent by weight of an amine-defunctionalized epoxy which is at least partially amidated with a polycarboxylic acid, an acid anhydride thereof or a functional equivalent thereof; and

(ii) from about 5 to 95 percent by weight of an acid group-containing vinyl addition resin having an acid value of 5 to 350; the percent by weight is based on total resin solids; and

(B) a curing agent comprising an aminoplast, phenoplast or blocked isocyanate;

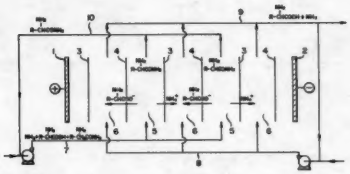
the base-neutralization is from 60 to 150 percent.

4,605,477

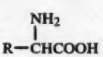
ELECTRODIALYTIC RECOVERY OF α-AMINO ACID FROM ITS AMIDE

Masaharu Doya; Toshio Kondo; Hideo Igarashi, and Takako Uchiyama, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Feb. 25, 1985, Ser. No. 704,596
Claims priority, application Japan, Mar. 1, 1984, 59-39496
Int. Cl.[4] B01D *13/02*
U.S. Cl. 204—182.6 **13 Claims**



1. A process for separating and recovering an α-amino acid which comprises subjecting an aqueous solution containing at least an α-amino acid and its corresponding α-amino acid amide to ion-exchange electrodialysis in the presence of ammonia, wherein the mol ratio of ammonia to α-amino acid is not less than 1 in a raw material aqueous solution, said α-amino acid being represented by the general formula:



where R denotes a hydrogen atom, lower alkyl group, substituted lower alkyl group, phenyl group, substituted phenyl group, furyl group, pyridyl group, thiazolyl group, imidazolyl group or indolyl group.

4,605,478

CATIONIC ELECTRODEPOSITABLE COMPOSITIONS CONTAINING FORMALDEHYDE SCAVENGER

Roger M. Christenson, Gibsonia; Joseph T. Valko, Pittsburgh; Joseph E. Plasynski, Arnold, and Roger L. Scriven, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 627,587, Jul. 3, 1984, Pat. No. 4,560,717.
This application Oct. 3, 1985, Ser. No. 783,721
Int. Cl.[4] C25D *13/10, 13/06*
U.S. Cl. 204—181.7 **11 Claims**

1. A method of coating a conductive substrate serving as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous cationic electrodeposition bath, said electrodeposition bath containing a positively charged film-forming resin and containing a material which has methylol or substituted methylol groups and is prepared from a formaldehyde-reactive material and formaldehyde; said material containing free formaldehyde and/or being capable of generating free formaldehyde which lowers the pH of the electrodeposition bath, said method comprising passing electric current between said cathode and said anode to cause a coating to deposit on said cathode, the electrodeposition bath further containing a formaldehyde scavenger which is non-ionic and which does not become ionic in the cationic electrodeposition bath; said formaldehyde scavenger being present in an amount sufficient to stabilize the pH of the electrodeposition bath.

2. The method of claim 1 in which the formaldehyde scavenger is water-soluble.

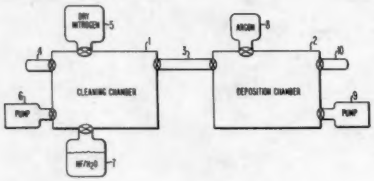
3. The method of claim 2 in which the formaldehyde scavenger is an amide which is reactive with formaldehyde under aqueous conditions.

4. The method of claim 3 in which the formaldehyde scavenger is urea.

4,605,479
IN-SITU CLEANED OHMIC CONTACTS

Thomas J. Faith, Jr., Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 24, 1985, Ser. No. 748,350
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 D **10 Claims**



1. A process of forming an ohmic contact between a layer of metallization and a substrate wherein the metallization contacts the substrate in contact openings in a layer of dielectric material covering the substrate comprising:

(a) heating the substrate under vacuum to at least about 30° C.;

(b) contacting the substrate with an etchant comprising hydrogen fluoride and water vapor, the temperature of the etchant being at least 5° C. below that of the substrate, thereby removing impurities etchable by hydrogen fluoride from the contact openings;

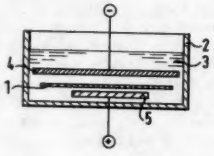
(c) sequentially in a closed system, depositing a layer of metallization onto the substrate to contact the substrate in the contact openings; and

(d) heating the substrate to a temperature sufficient to sinter the coatings and alloy them to the substrate in the openings.

4,605,480
DEVICE FOR CONTINUOUSLY ANODICALLY OXIDIZING ALUMINUM STRIPS ON ONE SURFACE THEREOF AND USE OF THESE ALUMINUM STRIPS IN THE PRODUCTION OF OFFSET PRINTING PLATES

Joachim Stroszynski, Wiesbaden; Walter Niederstätter, Eltville, and Gerhard Sprintschnik, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP83/00152, § 371 Date Feb. 13, 1985, § 102(e) Date Feb. 13, 1985, PCT Pub. No. WO84/04934, PCT Pub. Date Dec. 20, 1984
PCT Filed Jun. 13, 1983, Ser. No. 704,313
Int. Cl.[4] C25D *17/00*
U.S. Cl. 204—211 **11 Claims**



1. A device for anodically oxidizing a surface of an aluminum or aluminum alloy strip, comprising:

(a) at least one treating bath containing an aqueous acid electrolyte;

(b) at least one anode positioned in said electrolyte;

(c) at least one cathode positioned in said electrolyte in spaced relationship to said at least one anode, the electrolyte surrounding said anode and the electrolyte surrounding said cathode being in continuous contact;

(d) means for applying a direct current to said anode and said cathode; and

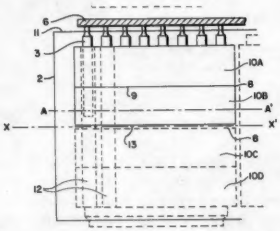
(e) means for conveying an aluminum or aluminum alloy strip between said anode and said cathode;

wherein a width of said anode perpendicular to a direction of conveyance of said strip is smaller than a width of said strip, and wherein a width of said cathode perpendicular to said direction of conveyance of said strip is larger than said width of said strip.

4,605,481
MODULAR CATHODIC BLOCK AND CATHODE HAVING A LOW VOLTAGE DROP FOR HALL-HEROULT ELECTROLYSIS TANKS

Bernard Langon, Saint Jean de Maurienne, France, assignor to Aluminium Pechiney, Paris, France

Filed May 29, 1985, Ser. No. 738,781
Claims priority, application France, Jun. 13, 1984, 84 10557
Int. Cl.[4] C25C *3/00*
U.S. Cl. 204—243 M **10 Claims**



1. A carbonaceous cathodic block having a low voltage drop, which is intended for tanks for the production of aluminum by electrolysis using the Hall-Heroult process, said tanks comprising a parallelepipedic metal casing having major and minor axes supporting a cathode on which the layer of liquid aluminum is formed, said cathode being formed by the juxtaposition of parallelepipedic carbonaceous blocks of elongate shape having major and minor axes, having a ratio of the length of the major axis to the minor axis which is at least equal to two, and in which there is cut at least one groove into which is sealed a steel bar disposed in parallel relationship to the short side of the casing and the end of which issues at the long side of the casing and connects to at least one cathodic collector, characterised in that the sealing grooves (**12**) are cut in the direction which is perpendicular to the major axis AA′ of the block which is itself disposed in parallel relationship to major axis of the casing.

4,605,482
FILTER PRESS TYPE ELECTROLYTIC CELL

Osamu Shiragami, Funabashi; Toshihiko Kuno, Ichihara; Yasuo Sajima, Yokohama; Kohji Saito, Chiba; Takahiro Uchibori, and Junjiro Iwamoto, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

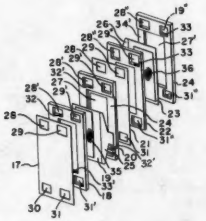
Filed Apr. 12, 1982, Ser. No. 367,386
Claims priority, application Japan, Apr. 28, 1981, 56-63378; May 26, 1981, 56-78686; Oct. 20, 1981, 56-166448
Int. Cl.[4] C25B *9/00, 11/03, 11/20*
U.S. Cl. 204—258 **13 Claims**

1. In a filter press type ion exchange membrane electrolytic cell comprising an anode compartment and a cathode compartment partitioned by a cation exchange membrane and being useful for obtaining a halogen, hydrogen and an alkali metal hydroxide from an alkali metal halide aqueous solution, or oxygen and hydrogen from an aqueous alkaline solution, an improvement characterized by:

(a) an anode compartment frame and a cathode compart-

ment frame, each having an essentially rectangular opening at its center constituting the non-conductive anode compartment or the non-conductive cathode compartment and four holes in the vicinity of its corners constituting passages for (1) an alkali metal halide aqueous solution or an aqueous alkaline solution, (2) a depleted brine and a halogen gas, or an aqueous alkaline solution and an oxygen gas, (3) water or a dilute alkali metal hydroxide aqueous solution and (4) an alkali metal hydroxide aqueous solution and a hydrogen gas, the former two holes being in communication with the opening constituting the anode compartment, and the latter two openings being in communication with the opening constituting the cathode compartment,

(b) a cation exchange membrane having four holes at positions corresponding to the four holes provided on the anode compartment frame and the cathode compartment



frame, or a cation exchange membrane having no such four holes and being smaller than said compartment frame but slightly larger than said openings of the compartment frames,

(c) an anode and a cathode having no four holes and being slightly larger than the openings of the anode compartment frame and the cathode compartment frame and smaller than the compartment frames, wherein a unit comprising said cathode compartment frame and said cathode disposed on each side thereof and a unit comprising said anode compartment frame and said anode disposed on each side thereof are alternately arranged via said cation exchange membrane, or wherein a unit comprising said anode and said anode compartment frame disposed on one side or each side thereof and a unit comprising said cathode and said cathode compartment frame disposed on one side or each side thereof are alternately arranged via said cation exchange membrane.

4,605,483

AN ELECTRODE FOR ELECTRO-PLATING NON-CONTINUOUSLY CONDUCTIVE SURFACES

Michaelson, Henry W., 744 Birchwood Ct., Westbury, N.Y. 11590

Filed Nov. 6, 1984, Ser. No. 668,701

Int. Cl.[4] C25B *11/02, 11/04;* **C25D** *17/06, 17/12*

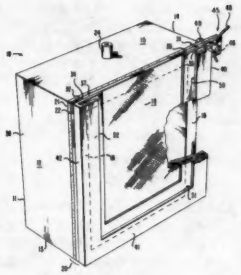
U.S. Cl. 204—280 **15 Claims**

1. An electrode, for use in electro-plating an object, comprising:

a housing having a plurality of sides and an internal enclosed chamber, wherein at least one of the sides is flexible and conductive and the remaining sides are rigid and non-conductive;

a port extending through one of the sides and into the chamber for routing a pressurized fluid into the chamber; and

means for holding an object to be electro-plated against the electrode such that whenever sufficient fluid is routed into the chamber the flexible side distends into abutting electri-



cal contact with at least one conductive region situated on a surface of the object.

4,605,484

HYDROGEN-EVOLUTION ELECTRODE

Hiroyuki Shiroki, and Yasuhide Noaki, both of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 549,755, Nov. 8, 1983, abandoned. This application May 6, 1985, Ser. No. 731,598

Claims priority, application Japan, Nov. 30, 1982, 57-208653; Mar. 8, 1983, 58-36620

Int. Cl.[4] C25B *11/00*

U.S. Cl. 204—290 R **7 Claims**

1. A hydrogen-evolution electrode comprising an electrically conductive substrate having thereon a coating comprising a chromium component and an oxide of at least one metal selected from the group consisting of nickel and cobalt produced by a method comprising:

(1) mixing a finely divided powder of at least one member selected from the first group consisting of nickel, cobalt, nickel oxide, cobalt oxide, nickel hydroxide, cobalt hydroxide, organic acid salts of nickel, organic acid salts of cobalt, inorganic acid salts of nickel and inorganic acid salts of cobalt with a finely divided powder of at least one member selected from the second group consisting of chromium, chromium oxide, chromium hydroxide, organic acid salts of chromium and inorganic acid salts of chromium in such an amount ratio as gives a mixture of the powders containing said chromium component in a proportion, in terms of atomic percentage, of 0.5 to 20%, said atomic percentage being defined by the following formula

$$\frac{A_{Cr}}{A_T} \times 100 \qquad (1)$$

wherein A_{Cr} represents the number of chromium atoms in the coating and A_T represents the total number of atoms of chromium and said at least one metal in the coating; and

(2) applying the resulting mixture onto an electrically conductive substrate by melt spraying thereby to obtain a hydrogen-evolution electrode having thereon a coating containing an oxide of at least one metal selected from the group consisting of nickel and cobalt in an amount, in terms of degree of oxidation, of 20 to less than 100%, said degree of oxidation being defined by the formula

$$\frac{H_1}{H_1 + H_0} \times 100$$

where H_0 represents the height of a peak of the highest

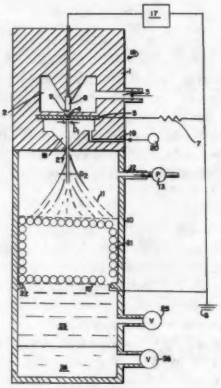
intensity X-ray diffraction line of a metal selected from the group consisting of nickel and cobalt when the coating is analyzed by X-ray diffractometry, or represents the arithmetic mean of the heights of peaks of the highest intensity X-ray diffraction lines respectively of nickel and cobalt in case the coating contains both nickel and cobalt; H_1 represents the height of a peak of the highest intensity X-ray diffraction line of an oxide of said metal, or represents the arithmetic mean of the heights of peaks of the highest intensity X-ray diffraction lines respectively of nickel oxide and cobalt oxide in case the coating contains both nickel oxide and cobalt oxide.

4,605,485

CHARGE INJECTION DEVICE

Anthony E. Cerkanowicz, Livingston, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 17, 1984, Ser. No. 601,253
Int. Cl.[4] B03C *5/00*
U.S. Cl. 204—302 **21 Claims**



1. A charge injection device of the kind having discharge means, including an orifice, for issuing free-charge injected fluid, and a first region of lower pressure downstream of said discharge means, said charge injection device comprising means arranged to raise the pressure in a second region immediately downstream of said orifice to above said downstream pressure such that fluid issuing from said discharge means passes through said second region before entering said first region.

4,605,486

COAL LIQUEFACTION PROCESS WITH INCREASED NAPHTHA YIELDS

Daniel F. Ryan, Friendswood, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

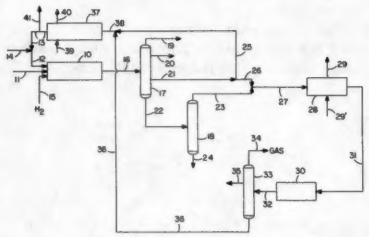
Filed Apr. 26, 1985, Ser. No. 727,976
Int. Cl.[4] C109 *1/00*
U.S. Cl. 208—412 **2 Claims**

1. A process for liquefying solid carbonaceous materials comprising the steps of:

(a) forming a slurry of finely divided solid carbonaceous material and a suitable solvent or diluent;

(b) subjecting the slurry from step (a) to liquefaction at an elevated temperature and pressure in the presence of molecular hydrogen to produce a normally gaseous product, a normally liquid product and a normally solid bottoms product;

(c) separating the product from step (b) into a gas phase, a liquid phase and a normally solid phase and further separating the liquid portion of the product into a naphtha boiling range product having an initial boiling point within the range from about 50° F. to about 100° F. and a final boiling point within the range from about 300° F. to about 450° F., a solvent boiling range product having an initial boiling point within the range from about 300° F. to about 450° F. and a final boiling point within the range from about 750° F. to about 850° F., and a vacuum gas-oil boiling range product having an initial boiling point equal to the final boiling point of the solvent boiling range material and a final boiling point within the range from about 950° F. to about 1050° F.;



(d) combining from about 5 wt % to about 20 wt % of the solvent boiling range product with from about 50 wt % to about 100 wt % of the vacuum gas-oil boiling range product and passing the mixture first to a hydrotreater and then to a catalytic cracker;

(e) separating the product from the catalytic cracker into a naphtha boiling range product and a solvent boiling range product;

(f) combining the solvent boiling range product from the catalytic cracker with the solvent boiling range materials separated from the liquid product; and

(g) hydrotreating the combined solvent boiling range streams.

4,605,487

USE OF METHANE, METHANE AND HYDROGEN, OR NATURAL GAS FOR PYROLYSIS GAS

Wolfgang Michel, Magdeburg; Heinz Paul, Möser; Andreas Rummel, Dessau; Gero Seher, Wernigerode; Manfred Ossowski, Magdeburg; Irmtrud Heberlein, Möser; Dieter Köstler, and Frank Wilhelm, both of Magdeburg, all of German Democratic Rep., assignors to VEB Schwermaschinenbau Karl Liebknecht Magdeburg, Magdeburg, German Democratic Rep.

Filed Sep. 26, 1984, Ser. No. 654,813
Claims priority, application German Democratic Rep., Dec. 22, 1983, 2584498
Int. Cl.[4] C10G *1/00*
U.S. Cl. 208—408 **4 Claims**

1. A method for the production of a liquid product from an organic bulk material which consists essentially of:

(a) providing a charge of dry organic bulk material, said charge being suitable for fluidization in a fluidized bed reaction chamber;

(b) passing said charge into a reaction chamber capable of containing a fluidized bed;

(c) conveying only a gas stream consisting essentially of methane or methane and hydrogen or natural gas into and through said charge in said reaction chamber, said gas stream being a fluidizing medium within said reaction chamber, so that said charge is fluidized within said reaction chamber;

(d) maintaining an elevated pyrolysis reaction temperature within said reaction chamber containing essentially only said dry organic bulk material and said gas stream,

whereby the concentration of the methane in said fluidizing medium is decreased, the proportion of liquid product formed in said fluidized charge in said reaction chamber is increased, and said liquid product has a substantially increased proportion of low-boiling short-chained hydrocarbon components, liquid product formation and refining of the liquid product thereby both taking place in said reaction chamber;

(e) withdrawing from said reaction chamber a refined liquid product in said reaction chamber; and

(f) withdrawing a spent gas stream from said reaction chamber.

4,605,488

CATALYTIC DEWAXING OF LIGHT AND HEAVY OILS IN DUAL PARALLEL REACTORS

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 606,495, May 3, 1984. This application May 13, 1985, Ser. No. 733,339

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.[4] C10G *65/18, 65/12, 67/02*

U.S. Cl. 208—78 **16 Claims**

1. An integrated process for catalytically dewaxing a relatively light petroleum chargestock, characterized by a 50% boiling point of less than about 850° F. and a kinematic viscosity at 100° C. of less than about 9 centistokes, and a relatively heavy petroleum chargestock, characterized by a 50% boiling point of greater than about 850° F. and kinematic viscosity at 100° C. of greater than about 9 centistokes comprising:

contacting the relatively light petroleum chargestock in a first dewaxing reactor with a dewaxing catalyst of a crystalline zeolite having pore openings defined by: (1) a ratio of sorption of n-hexane to o-xylene, on a volume percent basis, of greater than about 3, which sorption is determined at a P/P_o of 0.1 and at a temperature of 50° C. for n-hexane and 80° C. for o-xylene and (2) by the ability of selectively cracking 3-methylpentane (3MP) in preference to the doubly branched 2,3-dimethylbutane (DMB) at 1000° F. and 1 atmosphere pressure from a 1/1/1 weight ratio mixture of n-hexane/3-methyl-pentane/2,3-dimethylbutane, with the ratio of rate constants k_{3MP}/k_{DMB} determined at a temperature of 1000° F. being in excess of about 2 to produce a catalytically dewaxed light stock,

contacting the relatively heavy petroleum chargestock in a second dewaxing reactor with a dewaxing catalyst of a crystalline zeolite having pore openings defined by: (1) a ratio of sorption of n-hexane to o-xylene, on a volume percent basis, of less than about 3, which sorption is determined at a P/P_o of 0.1 and at a temperature of 50° C. for n-hexane and 80° C. for o-xylene, (2) by the ability of selectively cracking 3-methylpentane (3MP) in preference to the doubly branched 2,3-dimethylbutane (DMB) at 1000° F. and 1 atmosphere pressure from a 1/1/1 weight ratio mixture of n-hexane/3-methyl-pentane/2,3-dimethylbutane, with the ratio of rate constants k_{3MP}/k_{DMB} determined at a temperature of 1000° F. being less than about 2, and (3) a Constraint Index value of greater than about 1, to produce a catalytically dewaxed heavy stock,

and subsequently hydrotreating the effluent from said first and second dewaxing reactors in a downstream hydrotreating reactor.

4,605,489

UPGRADING SHALE OIL BY A COMBINATION PROCESS

Ajay Madgavkar, Katy, Tex., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 27, 1985, Ser. No. 749,219

Int. Cl.[4] C10G *21/16*

U.S. Cl. 208—87 **49 Claims**

29. A process for reducing the nitrogen content of shale oil comprising:

introducing shale oil feed to an extraction zone containing a solvent which is substantially immiscible with said shale oil, said solvent comprising an organic acid component selected from the group consisting of acetic acid, formic acid and mixtures thereof, and contacting said solvent for a time sufficient to form a nitrogen-lean raffinate and a nitrogen-rich extract comprising solvent and nitrogen-containing compounds;

separating the nitrogen-lean raffinate from the nitrogen-rich extract;

distilling the nitrogen-rich exact to form a first solvent distillate comprising at least a portion of the organic acid component substantially free of nitrogen-containing compounds and a residue comprising a high-nitrogen extract oil;

distilling the nitrogen-lean raffinate sufficiently to form a second solvent distillate comprising organic acid component that has dissolved in the raffinate and a shale oil distillate which is collected in a number of fractions wherein each fraction has a nitrogen content of no more than about 3,000 ppm, and a bottoms having a nitrogen content greater than that of the shale oil distillate; and

hydrotreating the bottoms sufficiently to reduce the nitrogen content of the bottoms to no more than about 3,000 ppm.

4,605,490

PROCESS FOR THE HYDROGENATION OF AROMATIC HYDROCARBONS

George J. Balinsky, Randolph, N.J.; Omer Biceroglu, Sarnia, Canada, and Joe S. Lin, Torrance, Calif., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 5, 1984, Ser. No. 658,376

Int. Cl.[4] C10G *45/00, 45/54;* C07C *5/10*

U.S. Cl. 208—143 **11 Claims**

1. A process for the hydrogenation of aromatic hydrocarbons, which comprises contacting a hydrocarbonaceous feed comprising aromatic hydrocarbons and less than about 5 wppm organic nitrogen at hydrogenation conditions with added hydrogen and a hydrogen sulfide partial pressure of less than about 0.5 psia with a catalyst which has been pretreated by a method which comprises the steps of:

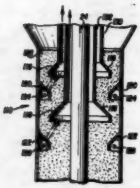
(a) contacting a catalyst having cracking activity and hydrogenation activity with a nitrogen-containing compound at conditions and for a time sufficient to decrease the cracking activity of said catalyst, whereby the hydrogenation activity of said catalyst is also decreased, said catalyst comprising at least one noble metal component of Group VIII of the Periodic Table of Elements composited with a Y-type crystalline aluminosilicate zeolite and a non-zeolitic inorganic oxide, and

(b) contacting the nitrogen-contacted catalyst resulting from step (a) with a hydrogen-containing gas at conditions and for a time sufficient to increase the hydrogenation activity of said nitrogen-contacted catalyst.

4,605,491
FCC CATALYST STRIPPING METHOD

James H. Haddad, Princeton Junction, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 18, 1984, Ser. No. 632,085
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—161 8 Claims



1. A method of stripping hydrocarbons from separated catalyst in a fluid catalytic cracking process, said method comprising the steps of:

passing said separated catalyst through a stripper vessel having an entrance, a catalyst exit and a stripped hydrocarbon exit:

causing said separated catalyst to follow a circuitous path concentrically around a riser conversion zone while flowing from said entrance through said stripper vessel to said catalyst exit;

injecting a stripping gas at a plurality of stages such that stripping gas injected at one stage is exposed to only a portion of said separated catalyst above the stripping gas injecting location and moves through said portion in a direction having a net radial component and is mixed with stripping gas from another stage when passing through said stripped hydrocarbon exit; and

passing said stripping gas and hydrocarbons strippe d from said separated catalyst directly to said stripped hydrocarbon exit.

4,605,492
SEPARATION AND CONVERSION PROCESSES WITH TITANIUM-CONTAINING MOLECULAR SIEVES

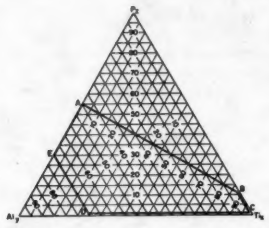
Brent M. T. Lok, New City; Bonita K. Marcus, Rye, and Edith M. Flanigen, White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 627,515, Jul. 3, 1984, Pat. No. 4,551,236, which is a division of Ser. No. 480,738, Mar. 31, 1983, Pat. No. 4,500,631. This application Oct. 30, 1985, Ser. No. 793,134
Int. Cl.[4] C10G *25/00;* C07C *12/62, 2/68*
U.S. Cl. 208—310 Z 25 Claims

1. Process for separating mixtures of molecular species wherein such mixtures contain molecular species having different degrees of polarity and/or kinetic diameters comprising contacting said mixture with at least one crystalline molecular sieve selected from the group consisting of crystalline molecular sieves comprising pores having nominal diameters of greater than about 3 Angstroms and whose chemical composition in the as-synthesize and anhydrous form is represented by the unit empirical formula:

$$mR:(Ti_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(Ti_xAl_yP_z)O_2$ has a value of between zero and about 5.0; and "x", "y" and "z" represent the mole fractions of titanium, aluminum and phosphorus, respectively, present as tetrahederal oxides, said mole fractions being



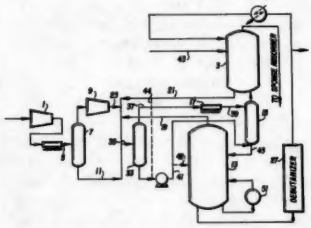
such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings and points A, B, C, D and E representing the following values for "x", "y" and "z":

Point	Mole Fraction		
	x	y	z
A	0.001	0.45	0.549
B	0.88	0.01	0.011
C	0.98	0.01	0.01
D	0.29	0.70	0.01
E	0.001	0.70	0.299

4,605,493
METHOD FOR MINIMIZING RECYCLING IN AN UNSATURATED GAS PLANT

Mohsen N. Harandi, Sewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 688,084
Int. Cl.[4] C10G *5/00, 7/02*
U.S. Cl. 208—341 12 Claims



1. A method of operating an unsaturated gas plant, wherein said plant comprises first means for receiving a low pressure gas input and for providing a liquid output and a gaseous output, an absorber for receiving an unstabilized gasoline input and a hydrocarbon oil input, a stripper and a low temperature separator for providing an overhead output to said absorber and a bottoms output to said stripper, said method comprising the steps of:

(a) mixing said liquid output from said first means, said gaseous output from said first means, bottoms product from said absorber and overhead products from said stripper;

(b) separating said mixture provided in step (a) into a liquid hydrocarbon portion and a gaseous portion;

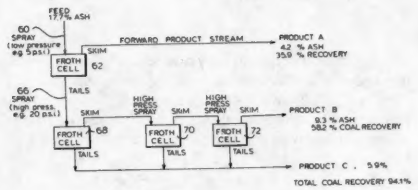
(c) introducing said liquid hydrocarbon portion into an upper section of said stripper; and
(d) introducing said gaseous portion into said low temperature separator.

4,605,494

MULTISTREAM, MULTIPRODUCT, PRESSURE MANIPULATION BENEFICIATION ARRANGEMENT

Lester E. Burgess, Media; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to Sohio Alternate Energy Development Co., Cleveland, Ohio

Filed Sep. 14, 1984, Ser. No. 650,961
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **4 Claims**



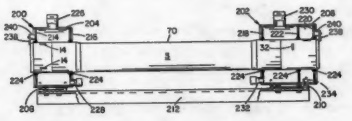
1. A multiple stream, multiple product method for froth flotation separation of the components of an input slurry having particulate coal therein, comprising:
(a) mixing chemical reagents with the input slurry to condition the surfaces of the particulate coal in the slurry, said chemical reagents comprising a monomer, a catalyst and a fluid hydrocarbon;
(b) in a forward product stream, applying a first pressure to the particulate coal slurry mixture to force it through and cause it to spray from at least one nozzle onto the surface of a liquid to create a floating froth phase on the liquid surface having a first quantity of the particulate coal therein, and allowing the remainder of the particulate coal slurry mixture to separate from the froth phase by sinking in the liquid, and separating the froth phase as a first product; and
(c) in a second scavenger product stream, applying a second pressure, greater than said first pressure, to the remainder of the separated particulate coal slurry mixture to force it through and cause it to spray from at least one nozzle onto the surface of a liuqid to create a second floating froth phase on the liquid surface having a second quantity of the particulate coal therein, and allowing the remainder of the particulate coal slurry to separate from the froth phase by sinking in the liquid, and separating the second froth phase as a second product, whereby first and second separate product streams are separated from the input slurry.

4,605,495

HYDROCYCLONE SEPARATOR APPARATUS

Peter J. Flynn, North Attleboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Continuation-in-part of Ser. No. 591,761, Mar. 19, 1984, abandoned. This application Jan. 18, 1985, Ser. No. 692,674
Int. Cl.[4] B04C *3/04, 3/06*
U.S. Cl. 209—211 **11 Claims**



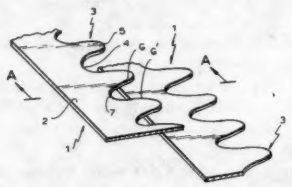
1. Hydrocyclone separator apparatus including at least one hydrocyclone separator for separating a fibrous slurry into two fractions of solids composition differing from each other in response to centrifugal force, said separator comprising:
an elongated body with sealed ends having three axially spaced portions of its sidewall apertured to provide respectively an inlet for feed slurry and respective outlets for the two separated fractions thereof, one of said apertured portions being adjacent one sealed end and another of said apertured portions being adjacent the opposite sealed end of said body;
and manifold structure for demountably receiving said separator comprising:
a slurry feed manifold and two outflow manifolds for respective association with said three apertured body portions of said separator, arranged with their sidewalls in parallel with one another;
axially aligned seal-lined openings through all of said manifold sidewalls of shape and diameter such that said separator may be pushed endwise through all of said openings to an operative position in which the sealing material of all of said apertures is in sealing engagement with said separator body;
the sidewall spacing of said respective manifolds being such that in said operative position of said separator the seal-lined apertures of the sidewalls of each manifold are sealingly engaged around corresponding portions of said separator body at opposite sides of the respective apertured portion of said body intended to communicate with said manifold;
the body of said separator being reduced in outer diameter between said corresponding portions sufficiently to exert substantially no sealing pressure on the seals when moved through them, at least half the length of said separator body being of said reduced diameter.

4. Hydrocyclone separator apparatus including at least one hydrocyclone separator for separating a fibrous slurry into two fractions of solids composition differing from each other in response to centrifugal force, said separator comprising:
an elongated body with sealed ends, the sidewall of said body having an apertured portion adjacent one end of said body and having two axially spaced adjacent apertured portions near its opposite end, one of said apertured portions forming an inlet and the other two of said apertured portions forming respective outlets for said two fractions; and manifold structure comprising:
a single manifold and two side-by-side manifolds arranged with their sidewalls in parallel with one another and with the sidewalls of said single manifold, and with their sidewall nearest said single manifold spaced therefrom at least substantially half the length of said separator body, one of said manifolds being for feed slurry and the other two being outflow manifolds for separated slurry fractions;
axially aligned seal-lined openings through all of said manifold sidewalls of a shape and size such that said separator may be pushed endwise through all of said openings to an operative position in which the sealing material of all of said apertures is in sealing engagement with said separator body;
the sidewall spacing of said respective manifolds being such that in said operative position of said separator the said apertured portions thereof are between the sidewalls of corresponding said manifolds;
said manifold structure exposing the body portion of said separator between said single manifold and other manifolds in operative position for hand manipulation relative to said seal-lined openings.

4,605,496
CLASSIFICATION SCREEN

Jorge Becatti, Monserrat 2195 Barrio Crisol Sud, Cordoba, Province of Cordoba, Argentina

Filed Jun. 13, 1984, Ser. No. 620,124
Claims priority, application Argentina, Jun. 14, 1983, 293333; May 17, 1984, 296693
Int. Cl.[4] B07B 1/46
U.S. Cl. 209—394 2 Claims



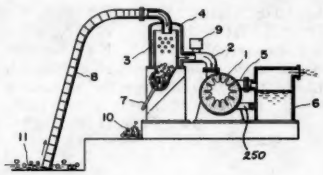
1. An adjustable classification screen for use with a machine which is provided with at least one screening bed subject to a vibrational movement and having a surface at least part of which is provided with a multiple number of passages for screening material, said classification screen comprising a plurality of substantially laminar elongated pieces stationary with respect to each other, each of said pieces being staggered with respect to the succeeding elongated piece without touching it, each of said pieces defining planes substantially parallel to each other, each of said pieces being located at a higher elevation than the piece which follows it with respect to the direction of advance of the material being screened to define a space separating the planes thereof, each of said pieces being substantially rigid and having a planar edge on one side of a planar portion, said planar portion having a portion of surface which is substantially free from any opening and an active edge on the side of the planar portion opposite the planar edge and having a plurality of projections which define alternating spaces, said projections defining notches having two sides in said active edge between each pair of projections, said pieces oriented with respect to the direction of advance of the material so that the material passes onto said planar portion first, and then onto said active edge, each of said pieces being inclined so that said planar portion is at a higher elevation than said active edge, each of said notches providing two points disposed on each side thereof, said points and a third intermediate point disposed on the planar edge of the piece located immediately adjacent to the active edge on the same bed, said third point being equidistant from each of said two points, said three points lying in a plane inclined in the direction of material advance so as to determine a passage greater than the space separating the planes of said pieces and defining a maximum mesh size of the screen, and a plurality of additional pieces each having a rearward edge and being slidably mounted onto a corresponding elongated piece, so that said additional piece may be reversably moved over the planar edge of the corresponding elongated piece to thereby adjustably reduce the size of said passage and providing said screen with a variable mesh size.

4,605,497
DEVICE FOR PROCESSING FLUID WITH SOLID BODIES

Toshinobu Araoka, Kitakyushu, and Shigeharu Suzuki, Osaka, both of Japan, assignors to Toyo Denki Kogyosho Co., Ltd., Kitakyushu, Japan

Filed Sep. 3, 1985, Ser. No. 772,261
Int. Cl.[4] E02F 5/28
U.S. Cl. 210—111 2 Claims

1. A device comprising means for processing fluid containing solid bodies including a separation tank provided with a strainer therein, a flow path communicating with the inner portion of said strainer for sucking up fluid containing solid bodies, a fluid discharging suction unit communicating with said separation tank and a solid discharging mechanism communicating with the inner portion of said strainer, wherein said fluid discharging suction unit comprises a vacuum pump for sucking up the fluid with solid bodies through said flow path

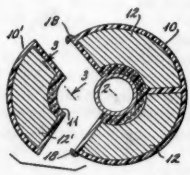


into the inner portion of said strainer and thereafter discharging only fluid throughtout said strainer, and said solid discharging mechanism comprises a change-over valve which automatically opens to discharge or closes to prevent discharge, in response to the internal pressure of said separation tank.

4,605,498
APPARATUS FOR MAGNETIC TREATMENT OF LIQUIDS

Peter A. Kulish, 175 West 6th St., Red Hill, Pa. 18076

Filed Apr. 6, 1984, Ser. No. 597,549
Int. Cl.[4] B01D 35/06
U.S. Cl. 210—222 9 Claims



1. An apparatus for magnetic treatment of potable liquids, and comprising:

magnetic means for providing north and south magnetic fields and concentrating predominantly only one of said magnetic fields on a central axis to provide magnetic treatment of a liquid located generally along said central axis and substantially within said one magnetic field; and

a casing surrounding said magnetic means for holding said magnetic means onto a conduit through which said liquid flows, said casing defining an internal diameter means for mating with different diameters of said conduit according to removal of portions of said internal diameter means.

4,605,499
WATER FILTER

Lawrence Wise, 4330 Hillcrest Dr., Apt. #804, Hollywood, Fla. 33021

Filed Feb. 19, 1985, Ser. No. 703,125
Int. Cl.[4] B01D 23/14
U.S. Cl. 210—282 4 Claims

1. A portable disposable water filter comprising:

a filter unit having a measured amount of filter medium;

a pouch of containing material for containing the filter medium;

a water container for containing filtered water having a mouth, a neck and a body; and

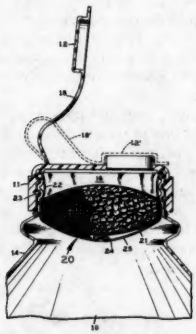
means for suspending the filter unit in the mouth of the water

container including a substantially circular skirt extending from said pouch of containing material;

said filter unit further comprising:

a larger sheet of containing material having a middle and a larger, substantially circular perimeter and an upper side;

a second smaller sheet of containing material, said second sheet having a smaller, substantially circular perimeter,



the second sheet attached along said second perimeter to the upper side of said first sheet of containing material, and leaving an outer part of said first larger sheet of containing material outside said smaller perimeter;

said first and second sheets forming between them said pouch for containing the filter medium; and

said outer part of said larger sheet forming said skirt.

4,605,500

HOLLOW-FIBER FILTER MODULE

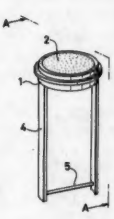
Tohru Takemura, Ohtake; Haruhiko Yoshida, Kuga; Takuma Mukai; Hiroshi Takahashi, both of Ohtake, and Yoshikazu Fujinaga, Toyohashi, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 719,237

Claims priority, application Japan, Apr. 24, 1984, 59-59330[U]; Apr. 25, 1984, 59-59873[U]; Jun. 1, 1984, 59-110943

Int. Cl.[4] B01D *13/00, 31/00*

U.S. Cl. 210—321.1 **5 Claims**



1. A hollow-fiber module comprising (a) an annular member, (b) a filter membrane consisting of a large number of hollow fibers, (c) a fastening member attached to the inside surface of said annular member for bundling and fixing said hollow fibers in a U-shaped attern with their both ends left open, (d) a supporting member consisting of a plurality of supporting pillars or a cylinder, said supporting member being joined to said annular member and extending along the U-shaped portions of said hollow fibers, and (e) a hollow fiber retaining means designed for holding all of said fibers from the bottom in a substantially fixed, parallel relationship sufficient to preclude entangling and flexural fatigue thereof, wherein said means is joined to said supporting member and extends through the space enclosed in the U-shaped portions of said hollow fibers.

4,605,501

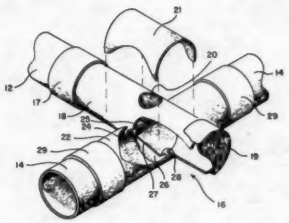
FLOW DIVIDER FOR DISTRIBUTION SYSTEMS

James E. Tyson, 10621 Six Forks Rd., Raleigh, N.C. 27614

Filed Jul. 12, 1985, Ser. No. 754,240

Int. Cl.[4] B01D *21/24*

U.S. Cl. 210—519 **6 Claims**



1. An improved flow divider comprising: a septic tank means; an effluent line communicatively connected at one end to said septic tank means; an inlet portion communicatively connected to the end of said effluent line opposite said septic tank means; a distribution portion communicatively connected to a transverse opening in the lower portion of said inlet portion to define (an overhanging) lip from which effluent must drop when passing from said inlet portion to said distribution portion, said transverse opening having a diameter slightly smaller than the interior diameter of said distribution portion; and partition like flow divider means disposed generally beneath said lip and extending across said distribution portion, said divider means including a steeply sloping first edge extending downwardly from a point adjacent said lip and a second edge extending upwardly from the end of said first edge opposite said lip at an angle greater than ninety degrees, with said first and second edges being of the knife edge type, whereby the buildup of particulate and other solids on or adjacent the flow divider can be prevented.

4,605,502

METHODS FOR PURIFYING WATER OR WATER-CONTAINING MATERIAL USING MICROORGANISMS AND LIVING BACTERIAL PREPARATIONS AS WELL AS METHOD FOR PREPARING AND STORING SAME

Kosei Hata, Osaka, Japan, assignor to Seiken Kai Foundational Juridical Person, Osaka, Japan

Continuation of Ser. No. 958,469, Nov. 7, 1978, abandoned. This application Sep. 10, 1980, Ser. No. 185,718

Claims priority, application Japan, Dec. 3, 1977, 52-145546

Int. Cl.[4] C02F *3/34*

U.S. Cl. 210—611 **7 Claims**

1. A method for purifying water or a water-containing material which comprises contacting said water or water-containing material with a purifying effective amount of a bacterial composition comprising one or more bacterial strains

(1) which can grow in an S-W medium consisting of 1 g of KH_2PO_4, 0.7 g $MgSO_4.7H_2O$, 1 g of NaCl, 4 g of $(NH_4)_2HPO_4$, 0.03 g of $FeSO_4.7H_2O$ and 5 g of glucose

(2) which exhibit(s) a μ value larger than that exhibited by coliform bacteria under environmental conditions, and

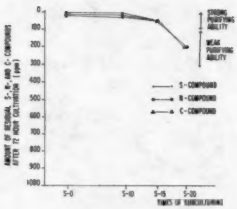
(3) which exhibits(s) promoted growth by the addition of at least one of (i) a foul smelling S compound,

(ii) a foul smelling N compound, or

(iii) a foul smelling C compound,

said one or more strains as a whole exhibiting each of S-, N- and C-actions, said one or more bacterial strains being selected

from the group consisting of Acinetobacter sp. SNC FRI No. 2544, Nitrobacter sp. SNC FRI No. 2545, Thiobacillus sp. SNC FRI No. 2546, Pseudomonas sp. SNC FRI No. 2822, Thiobacillus sp. SNC FRI No. 2823, Pseudomonas sp. SNC FRI No. 2927, Pseudomonas Sp. SNC FRI No. 2928, Thiobacillus sp. SNC FRI No. 2929, Thiobacterium sp. SNC FRI No. 3575, Thiobacterium sp. SNC FRI NO. 3576, Macromonas Sp. SNC FRI No. 3577, Macromonas Sp. SNC FRI No. 3578, Pseudomonas sp. SNC FRI No. 4264, Pseudomonas Sp. SNC FRI No. 4265, Thiobacillus Sp. SNC FRI No. 4268, Thiobacillus Sp. SNC FRI No. 4269, Acinetobacter sp. SNC FRI No.



4270, Bacillus sp. SNC FRI No. 4684, Bacillus sp. SNC FRI No. 4685, Streptococcus sp. SNC FRI No. 4686, Streptococcus sp. SNC FRI No. 4687, Corynebacterium sp. SNC FRI No. 4688, Corynebacterium sp. SNC FRI No. 4689, Vibrio sp. SNC FRI No. 4690, Vibrio sp. SNC FRI No. 4691, Photobacterium sp. SNC FRI No. 4692, Photobacterium sp. SNC FRI No. 4693, Flavobacterium sp. SNC FRI No. 4694, Flavobacterium sp. SNC FRI No. 4695, Aeromonas sp. SNC FRI No. 4696, Aeromonas sp. SNC FRI No. 4697, Alcaligenes sp. SNC FRI No. 4698, Alcaligenes sp. SNC FRI No. 4699, Nitrobacter sp. SNC FRI No. 4700 and Nitrobacter Sp. SNC FRI No. 4701.

4,605,503

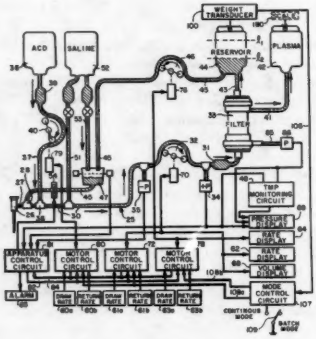
SINGLE NEEDLE BLOOD FRACTIONATION SYSTEM HAVING ADJUSTABLE RECIRCULATION THROUGH FILTER

Arnold C. Bilstad, Deerfield; Richard I. Brown, Northbrook, and Robert J. Kruger, Arlington Heights, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 26, 1983, Ser. No. 498,581

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—651 **14 Claims**



13. The method of separating a blood component from whole blood, utilizing a single lumen phlebotomy needle, and flow-through blood separating means, comprising the steps of:

continuously pumping in whole blood drawn from a donor through the single lumen of the needle through the separation means to continuously separate the blood into a desired blood fraction component and a fraction-depleted blood component;

continuously collecting the fraction-depleted blood component from the separation means in a reservoir;

intermittently pumping back a volume of the fraction-depleted blood component from the reservoir toward the single lumen needle by initiating said pumping back step when the volume of the fraction-depleted blood component in the reservoir rises above a predetermined maximum level and by terminating said pumping back step when the volume of the fraction-depleted blood component in the reservoir returns to a predetermined minimum level; and

maintaining said pumping back step at a higher rate than said pumping in step to return, during said pumping back step, a first portion of the intermittently pumped volume of the fraction-depleted blood component to the donor through the single lumen needle while recirculating a second portion of the intermittently pumped volume of the fraction-depleted blood component back through the separation means along with the whole blood which is being continuously pumped therethrough.

4,605,504

CHROMATOGRAPHIC SEPARATION OF METALS WITH POLYETHERURETHANE PARTICLES

Aris Van Elven, Leersum, and Henricus G. J. Overmars, Nijbeets, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappellijk Onderzoek, The Hague, Netherlands

Division of Ser. No. 485,418, Apr. 15, 1983, abandoned. This application May 6, 1985, Ser. No. 730,422

Claims priority, application Netherlands, Apr. 21, 1982, 8201654

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—656 **6 Claims**

1. A method for the extraction and separation of metal ions from a liquid sample which comprises

(a) preparing a chromatographic column containing non-sticky polyetherurethane particles having an absorptive activity, said polyetherurethane particles being prepared by first reacting a polyalkylene oxide having a molecular weight of at least 500 with a diisocyanate to form a prepolymer and subjecting said prepolymer to polycondensation in an aqueous suspension medium in the presence of an equivalent amount of a piperazine compound selected from the group consisting of piperazine and 2-methylpiperazine to form the polyetherurethane particles;

(b) applying the liquid sample to the column, whereupon the metal ions are absorbed into the polyetherurethane particles; and

(c) recovering the absorbed metal ions from the polyetherurethane particles by applying an eluant.

4,605,505

DRILLING FLUIDS

Makoto Yanagida, Tokyo; Yukihiko Sekimoto, Saitama, and Shoichi Kanda, Kanagawa, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

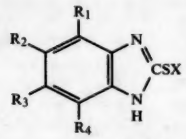
Filed Apr. 2, 1985, Ser. No. 719,388

Claims priority, application Japan, Apr. 2, 1984, 59-63407; Apr. 2, 1984, 59-63410; May 22, 1984, 59-101780

Int. Cl.[4] C09K *7/02*

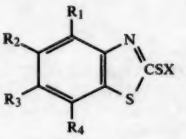
U.S. Cl. 252—8.514 **4 Claims**

1. A drilling fluid consisting essentially of sodium carboxymethyl cellulose present at a water loss controller, bentonite, water, and at least one compound selected from the group consisting of 2-mercaptobenzimidazole compounds, 2-mercaptobenzothiazole compounds, 2-mercaptothiazoline and 2-thioimidazolidone, wherein the 2-mercaptobenzimidazole compounds are represented by the formula (I):



(I)

wherein each of R_1, R_2, R_3, and R_4 represents a hydrogen atom or a lower alkyl group, and X represents a hydrogen atom, an alkali metal, or ammonium, and the 2-mercaptobenzothiazole compounds are represented by the formula (II)



(II)

wherein each of R_1, R_2, R_3, and R_4 represents a hydrogen atom or a lower alkyl group, and X represents a hydrogen atom, an alkali metal, or ammonium, and the concentration of said compounds contained in the drilling fluid is from about 0.001% to about 0.2% by weight, based on the total weight of drilling fluid.

4,605,506

FABRIC SOFTENING BUILT DETERGENT COMPOSITION

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,467

Int. Cl.[4] C11D *1/831, 3/12;* **D06M** *11/00, 13/46*

U.S. Cl. 252—8.75 **11 Claims**

1. A fabric softening built detergent composition comprising a detersive proportion, within the range of 5 to 30%, of a synthetic organic detergent selected from the group consisting of anionic detergents, nonionic detergents, and mixtures thereof, a building proportion, within the range of 5 to 40%, of polyacetal carboxylate builder for such detergent(s), which is of calculated weight average molecular weight in the range of about 3,000 to 20,000, and a fabric softening proportion within the range of 3 to 25%, of bentonite, in which detergent composition the fabric softening activity is greater than that attributable to the bentonite.

2. A detergent composition according to claim 1 which comprises an antistatic proportion of a quaternary ammonium compound which is a cationic antistatic agent which, upon washing of fabrics of synthetic organic polymers, inhibits development of static cling during automatic laundry drying.

4,605,507

PROCESSES FOR MAKING A SULFUR SUSPENSION AND A SULFURIZED CUTTING FLUID

Richard J. Windgassen, Wheaton, and J. Andrew Waynick, Bolingbrook, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 553,199, Nov. 18, 1983. This application May 13, 1985, Ser. No. 733,851

Int. Cl.[4] C10M *135/02*

U.S. Cl. 252—45 **28 Claims**

1. A process for preparing a suspension of finely-divided sulfur in a fluid, which process comprises: (1) blending a base oil and a thickener in a mixing apparatus to form a suspending medium of an oil-thickener blend or blending a base oil and a lubricating grease in a mixing apparatus to form a suspending medium of an oil-grease blend, said base oil being either a mineral lubricating oil or a synthetic lubricating fluid; (2) introducing elemental sulfur into said suspending medium while continually agitating said suspending medium to form an unfinished suspension of sulfur in said suspending medium, said introducing being carried out for a period of time within the range of 1 minute to 1 hour, the amount of sulfur that is added being sufficient to provide a suspension containing up to about 70 wt% sulfur; and (3) homogenizing said unfinished suspension of sulfur in a high-shearing mechanical device by passing said unfinished suspension of sulfur through said high-shearing mechanical device from one to three times at a temperature within the range of room temperature to 121° C. (250° F.) to provide a suspension of finely-divided sulfur.

4,605,508

RAPIDLY DISSOLVING GRANULAR HYDRATED CALCIUM HYPOCHLORITE

David C. Dodge, Guilford; David F. Knoop, Bethany, both of Conn.; George T. Thomas, Martinez, Ga., and James P. Newman, Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Nov. 1, 1984, Ser. No. 667,174

Int. Cl.[4] C11D *3/395*

U.S. Cl. 252—95 **5 Claims**

1. A rapidly dissolving granular hydrated calcium hypochlorite product consisting essentially of hydrated calcium hypochlorite particles having at least 95 percent of said particles within a size range of from about 300 to about 850 microns and having a packed bulk density from about 0.90 to about 1.03 grams per cubic centimeter.

4,605,509

DETERGENT COMPOSITIONS CONTAINING SODIUM ALUMINOSILICATE BUILDERS

John M. Corkill, Wyoming; Bryan L. Madison, Cincinnati, and Michael E. Burns, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 359,293, May 11, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 450,266

Int. Cl.[4] C02F *1/42;* **C11D** *3/06, 3/12, 3/20*

U.S. Cl. 252—131 **56 Claims**

1. A detergent composition capable of rapidly reducing the free polyvalent metal ion content of an aqueous solution comprising:

(a) from about 5% to about 95% by weight of a water-insoluble crystalline aluminosilicate ion exchange material of the formula

$$Na_z[(AlO)_z(SiO_2)_y]xH_2O$$

wherein z and y are integers of at least 6; the molar ratio of z to y is in the range from 1.0 to about 0.5, and x is an integer from about 15 to about 264; said aluminosilicate ion exchange material having a particle size diameter from about 0.1 micron to about 10 microns; a calcium ion exchange capacity on an anhydrous basis of at least about 200 milligrams equivalent of $CaCO_3$ hardness/gram; and a calcium ion exchange rate on an anhydrous basis of at least about 2 grains/gallon/minute gram;

(b) from about 5% to about 95% by weight of a water-soluble organic surface-active agent selected from the group consisting of anionic, nonionic, ampholytic and zwitterionic surface-active agents and mixtures thereof; and

(c) from about 5% to about 50% by weight of an auxiliary detergent builder salt.

4,605,510

LIQUID CRYSTAL COMPOSITION FOR ELECTROOPTICAL DEVICES FOR PRESENTATION OF INFORMATION

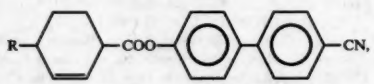
Vladimir S. Bezborodov; Viktor A. Konovalov; Jury L. Ptashnikov; Vladimir M. Astafiev; Anatoly A. Minko; Anatoly I. Dudarchik, all of Minsk; Galina A. Zanegina, and Anatoly M. Poimanov, both of Ordzhonikidze, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Prikladnykh Problem Imeni A.N. Sevchenko, Minsk, U.S.S.R.

Filed Jan. 25, 1985, Ser. No. 694,688

Int. Cl.[4] C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299.66 **1 Claim**

1. A liquid crystal composition for electrooptical devices for presentation of information comprising liquid crystal 4-(4'-cyanodiphenyl)esters of trans-4''-n-alkylcyclohex-2-enecarboxylic acids of the general formula:



wherein R is a normal-structure CH_3—C_7H_{15} radical, and a liquid crystal 4-n-pentyl-4'-cyanodiphenyl, the components being employed in the following proportions, parts by weight:

4-(4'-cyanodiphenyl)esters of trans-4''-n-alkylcyclohex-2-enecarboxylic acids: 2 to 4

4-n-pentyl-4'-cyanodiphenyl: 6 to 8.

4,605,511

STABLE STILBENE FLUORESCENT BRIGHTENER SOLUTION

Werner Fringeli, Laufen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

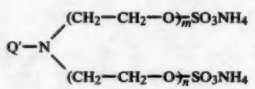
Continuation of Ser. No. 251,834, Apr. 8, 1981, abandoned, which is a continuation of Ser. No. 55,418, Jul. 6, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,273

Claims priority, application Switzerland, Jul. 17, 1978, 7707/78

Int. Cl.[4] C09K *11/06*

U.S. Cl. 252—301.21 **2 Claims**

1. A stilbene fluorescent brightener solution which is stable to metal ions and metal catalysts and stable on storage, which contains a stilbene fluorescent brightener containing sulfonic acid groups and a stabilising fatty amine oxyalkylation product of the formula



in which Q' is the hydrocarbon radical of tallow fat amine and m and n are integers, the sum of m+n being 6 to 8.

4,605,512

SMALL PEPTIDES WITH THE SPECIFICITY OF FOOT AND MOUTH DISEASE VIRAL ANTIGENS

Heinz E. Schaller, Heidelberg, and Eberhard P. Pfaff, Schwaigern-II, both of Fed. Rep. of Germany, assignors to Biogen N.V., Curacao, Netherlands

Filed Mar. 25, 1983, Ser. No. 478,901

Claims priority, application United Kingdom, Mar. 26, 1982, 8209041

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.005 **1 Claim**

1. A peptide displaying the antigenicity of a FMD viral antigen selected from the group of peptides consisting of: Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu, Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu—Pro—Thr, Arg—Tyr—Asn—Arg—Asn—Ala—Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu—Pro—Thr, Cys—Arg—Tyr—Asn—Arg—Asn—Ala—Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu, and Arg—Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu.

4,605,513

PROCESS FOR INHIBITING PEPTIDE CARBAMYLATION

Richard D. DiMarchi, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 8, 1984, Ser. No. 638,848

Int. Cl.[4] C07K *7/40*

U.S. Cl. 530—303 **14 Claims**

1. Process for inhibiting carbamylation of peptides in a cyanate-containing or cyanate-generating medium during treatment of said peptides, which comprises carrying out said treatment in the presence of a carbamylation-inhibiting amount of an agent selected from the group consisting of 1,2-ethylene diamine and 1,2-ethylene diamine-like materials.

4,605,514

DES-4-LEUCINE-CALCITONIN

Ronald C. Orlowski, Frankfort; Jay K. Seyler, Bourbonnais, and Glenn L. Stahl, Bradley, all of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Sep. 24, 1984, Ser. No. 653,748

Int. Cl.[4] C07K *7/36*

U.S. Cl. 530—307 **7 Claims**

1. A peptide having the structure:

Cys—Ser—Asn—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—
—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—
—Pro—Arg—Thr—Asn—Thr—Gly—Ser—Gly—Thr—Pro—
—NH_2: Salmon,

Cys—Ser—Asn—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—
—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—
—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—
—NH_2: Eel, or

Cys—Gly—Asn—Ser—Thr—Cys—Met—Leu—Gly—Thr—Tyr—
—Thr—Gln—Asp—Phe—Asn—Lys—Phe—His—Thr—Phe—
—Pro—Gln—Thr—Ala—Ile—Gly—Val—Gly—Ala—Pro—
—NH_2: Human.

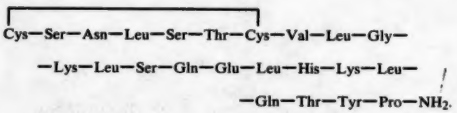
4,605,515

CALCITONIN-(1-23)-PEPTIDE AMIDE

Ronald C. Orlowski, Frankfort, and Glenn L. Stahl, Bradley, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,455
Int. Cl.[4] C07K *7/36*
U.S. Cl. 530—307 3 Claims

1. A peptide having the structure:



4,605,516

Patent Not Issued For This Number

4,605,517

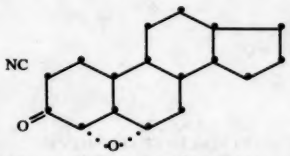
METHOD OF PREPARING STEROID COMPOUNDS OF CONTROLLED PARTICLE SIZE

Derek C. Riley, Tyne and Wear, and David Johnston, Newcastle upon Tyne, both of England, assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 11, 1984, Ser. No. 659,594
Claims priority, application United Kingdom, Oct. 29, 1983, 8328929
Int. Cl.[4] C07J *43/00*
U.S. Cl. 540—52 17 Claims

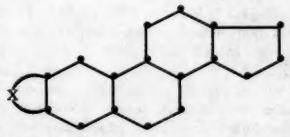
1. The method of preparing a compound having a basic ring structure of the general formula:

(II)



or

(III)



wherein X represents the remainder of a heterocyclic ring, in particular a 5-membered ring having at least two heteroatoms, in the form of particles having a means equivalent sphere volume diameter less than about 20 μm, at least 95% of the particles having a particle size of less than about 50 μm, or having a specific surface area from about 0.1 to about 10 m^2g^{-1}, which method comprises dissolving the compound in an organic solvent, precipitating the compound by mixing an approximately equal volume of a non-solvent for the compound with the resulting solution, and controlling the mixing conditions so that the time of mixing is from about 0.5 to about 30 minutes and the mixture is agitated during mixing.

4,605,518

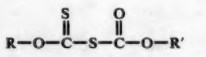
INDUSTRIAL PROCESS FOR THE MANUFACTURE OF ALKYL XANTHOGEN FORMATES

Ronald D. G. Crozier, 4 Daisy La., Ridgefield, Conn. 06877

Continuation of Ser. No. 270,362, Jun. 4, 1981, Pat. No. 4,454,051. This application Jun. 1, 1982, Ser. No. 383,559
Int. Cl.[4] C07C *154/02*
U.S. Cl. 558—244 7 Claims

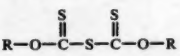
1. In the process for the preparation of alkyl xanthogen formate of the formula:

(I)

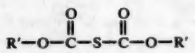


in which R and R' are selected from the group consisting of alkyl groups with 1 to 6 carbon atoms, straight chained or branched, pure or in mixtures; said formate being prepared by reaction of an alkaline alkyl xanthate and an alkyl chloroformate, and wherein secondary reactions give rise to the following co-products;

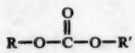
(II)



(III)



(IV)



the improvements comprising:

varying and controlling the relative concentrations of compounds I-IV by:

forming an aqueous emulsion of an alkyl chloroformate of the general formula:

slowly adding an alkaline xanthate dissolved in water or excess alcohol used in its manufacture, to the suction of

a pump feeding through a heat exchanger in a recirculation loop to a second reactor;
controlling the flows and reaction temperature to increase or limit the formation of compound (II);
regulating the reaction temperature in said heat exchanger within the range of 20° C. to 45° C., whereby the reaction mass in said reactor does not exceed 56° C.;
maintaining the molar ratio between the alkaline alkyl xanthate and the alkyl chloroformate between 1.03:1 and 1.5:1;
the amount of water employed to emulsify said alkyl chloroformate being the minimum amount required to keep the alkali chloride, formed in the reaction, in solution; and
washing the reaction mix with water to eliminate soluble impurities.

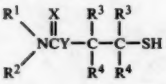
4,605,519

O- AND S-(2-MERCAPTOALKYL)- MONO- OR DIHYDROCARBYL CARBAMOTHIOATES AND S-(2-MERCAPTOALKYL)MONO- OR DIHYDROCARBYL CARBAMODITHIOATES

Roger W. Bergman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1983, Ser. No. 560,006
Int. Cl.[4] C07C *155/02, 125/06*
U.S. Cl. 558—234 **19 Claims**

1. A 2-mercaptoalkyl carbamothioate which corresponds to the formula:



wherein
R^1 is hydrogen or $C_{1\text{-}20}$ hydrocarbyl;
R^2 is $C_{1\text{-}20}$ hydrocarbyl;
R^3 is separately in each occurrence hydrogen or $C_{1\text{-}20}$ hydrocarbyl;
R^4 is separately in each occurrence hydrogen or $C_{1\text{-}20}$ hydrocarbyl;
X is O or S; and
Y is O or S;
with the proviso that both X and Y cannot be oxygen and with the further proviso that at least one R^3 and one R^4 on the same carbon atom on each alkylene moiety must be hydrogen.

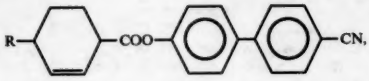
4,605,520

LIQUID CRYSTAL 4-(4'-CYANODIPHENYL) ESTERS OF TRANS-4''-N-ALKYLOCYCLOHEX-2-ENECARBOXYLIC ACIDS

Vladimir S. Bezborodov; Viktor A. Konovalov, and Jury L. Ptashnikov, all of Minsk, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Prikladnykh Fizicheskikh Problem Imeni A.N. Sevchenko, Minsk, U.S.S.R.

Filed Jan. 25, 1985, Ser. No. 694,684
Int. Cl.[4] G02F *1/13;* C09K *3/34;* C07C *121/48, 121/60*
U.S. Cl. 558—414 **1 Claim**

1. Liquid crystal 4-(4'-cyanodiphenyl) esters of trans-4''-n-alkylcyclohex-2-enecarboxylic acids of the general formula:



wherein R is a CH_3–C_7H_{15} radical of a normal structure.

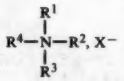
4,605,521

PROCESS FOR THE PREPARATION OF ORGANIC NITRILES FROM ORGANIC CARBOXYLIC ACID PRIMARY AMIDES

Robert J. I. Eubanks, and James G. Pacifici, both of Batesville, Ark., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,926
Int. Cl.[4] C07C *120/10*
U.S. Cl. 558—313 **12 Claims**

1. A homogeneous process for preparing organic nitriles which comprises reacting an organic carboxylic acid primary amide selected from the group consisting of aliphatic carboxylic acid primary amide, cycloaliphatic carboxylic acid primary amide, heterocyclic carboxylic acid primary amide and aromatic carboxylic acid primary amide containing about 2 to about 22 carbon atoms with at least a stoichimetric amount of a dehydrating agent at a tenperature of about 25° C. to 90° C. in the presence of a catalytic amount of a quaternary ammonium salt having the formula:



wherein
R^1, R^2, R^3, and R^4 are each independently selected from alkyl of from 1 to 18 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 18 carbon atoms, and aryl of from 6 to 18 carbon atoms and X is an anion.

4,605,522

METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE OR SALTS

Jeffery D. Robbins, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 499,017, May 17, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,323
Int. Cl.[4] C07F *9/38*
U.S. Cl. 260—502.5 F **5 Claims**

1. A method for the production of N-phosphonomethylglycine and soluble salts thereof which comprises reacting glycinemethylenephosphinic acid or soluble salts thereof with an excess of an alkali or alkaline earth base for a period of time and at a temperature ranging from about 125° C. to about 135°

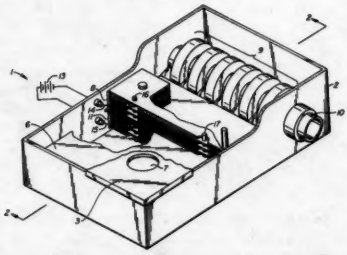
C., sufficient to cause oxidation of the glycinemethylenephosphinic acid or soluble salts thereof to N-phosphonomethylglycine salts, wherein there is present in solution an amount of alkali or alkaline earth base equivalent to from about 10 to about 37 moles of sodium hydroxide per mole of glycinemethylene phosphinic acid or disodium salt thereof.

4,605,523

APPARATUS FOR IMPROVED FUEL EFFICIENCY

Winston B. Smillie, 2760 Park Ave., Laguna Beach, Calif. 92651

Filed Jun. 4, 1984, Ser. No. 616,995
Int. Cl.[4] F02M *27/04*
U.S. Cl. 261—1 **2 Claims**



1. A device for enhancing the combustibility of a combustible fluid mixture which comprises:

an enclosed chamber having an inlet port, an outlet port and a channel for the continuous flow of said fluid mixture therebetween;

a plurality of regularly spaced parallel plate electrodes of alternating charge establishing an electric field across two portions of said channel in a direction perpendicular to the direction of flow of said fluid mixture; and

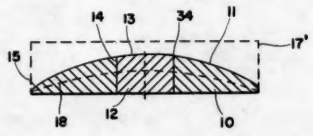
a plurality of regularly spaced parallel plates of ferromagnetic material of alternating polarity establishing a magnetic field across one portion of said channel between said electric field portions in a direction perpendicular to both the direction of flow of said fluid mixture and the direction of said electric fields.

4,605,524

METHOD AND MASTER-DIE FOR CASTING A BIFOCAL CONTACT LENS IN A SINGLE PIECE

Frederick J. Danker, Boonton, N.J., assignor to Danker Laboratories, Inc., Sarasota, Fla.

Filed Nov. 19, 1984, Ser. No. 672,840
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—2.5 **11 Claims**



1. Method of casting in one piece a bifocal contact lens for improving the vision of a living eye, comprising the steps of:

providing a carrier portion of a first metal master-die with a convex surface of a first value of radius of curvature surrounded by a narrow rounded-off rim portion of small radius of curvature, said first value of radius of curvature being of a magnitude for correction of near vision for a living eye by a contact lens;

providing a plug insert portion of said first metal master-die with a convex surface of a second value of radius of curvature, said second value of radius of curvature being of a magnitude for correction of distant vision for a living eye by a contact lens, said second radius of curvature being greater than first radius curvature;

cutting an aperture in said carrier portion of a shape and size suitable for a shrink-fit of said plug insert portion in said carrier portion;

inserting and shrink-fit securing said plug insert portion in said carrier portion of said first master-die with adjustment of said plug insert portion in said aperture to optimise the fit of said convex surfaces to each other before shrink-fit securing;

providing a second metal master-die having a concave curved surface of a third value of, radius of curvature differing from at least one of said first and second values or radius of curvature, said third value of radius of curvature being of a magnitude for fitting the cornea of a living eye by the posterior surface of a contact lens;

making first and second working dies respectively from said first and second master-dies, and

casting, between said first and second working dies, a lens, of a transparent synthetic polymeric material which is sufficiently thin to be usable as a contact lens for a living eye.

7. A master-die for making working dies usable in the manufacture of one-piece cast bifocal lenses for vision-improving use, comprising:

a carrier portion of a metal capable of having its surfaces ground and polished to an optical smoothness, said carrier portion having a convex surface on one side thereof which has a first value of radius of curvature and is surrounded by a narrow rounded-off rim portion of small radius of curvature, said carrier portion having an aperture therethrough, and

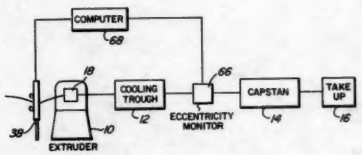
a plug insert portion of a metal capable of being ground and polished to an optically smooth surface and having a convex surface of a second value of radius of curvature which is greater than said first value of radius of curvature, said plug insert portion being tightly fitted in said aperture in said carrier portion in such a way that said convex surface of a second value of radius of curvature fits substantially as closely as possible to said convex surface of a first value of radius of curvature of said carrier portion.

4,605,525

METHOD FOR FORMING INSULATING ELECTRICAL CONDUCTOR

Gordon D. Baxter, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 4, 1985, Ser. No. 697,805
Int. Cl.[4] B29C *47/92*
U.S. Cl. 264—40.5 **3 Claims**



1. A method of forming an insulation layer upon an electrical conductor comprising:

passing the conductor along a feedpath through a passage of a die insert with lateral clearance, towards an outlet orifice of the die insert and also, with lateral clearance, through the outlet orifice while lying in contact with a part only of the surface of the insert which defines the orifice, and passing

the conductor through a die orifice to extrude onto it elastomeric material for forming the layer while contact of the conductor with said surface part of the insert guides the conductor into a particular lateral position as it passes through the orifice;

monitoring the radial position of the conductor within the layer; and

controllably moving the conductor laterally of its feedpath at a position upstream from the outlet orifice of the die insert dependent upon the eccentricity of the conductor by combining movements of the conductor in two planes so as to cause the conductor to change its angle of approach to the outlet orifice to alter the angle of departure from the outlet orifice and hence its lateral position within the die orifice to achieve concentricity of the conductor within and surrounding clearance from a surface defining the die orifice.

2. Apparatus for forming an insulating layer upon an electrical conductor comprising an extruder having an extruder head provided with a die orifice and a die insert within the head, the insert having an outlet orifice for passage of the conductor along its feedpath towards the die orifice, and upstream of the outlet orifice, the apparatus defines a passage of larger section than the outlet orifice to allow for lateral clearance for the conductor on its feedpath, monitoring means to monitor the radial position of the conductor within the layer, and means to controllably move the conductor laterally of its feedpath within two planes and within the larger section passage so as to change the angle of approach of the conductor towards the outlet orifice.

4,605,526

PROCESS FOR PRODUCING DENSE MEMBRANES

Marinus J. Reynhout, and Albert van der Scheer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1985, Ser. No. 694,739

Claims priority, application European Pat. Off., Oct. 15, 1984, 84201486-2

Int. Cl.⁴ B29C *67/20*

U.S. Cl. 264—41 **11 Claims**

1. A process for producing dense membranes, wherein a solution comprising a polar polymer and/or a polar prepolymer in a polar solvent which is substantially soluble in a polar liquid is allowed to spread out over the surface of the polar liquid and the spread out solution is allowed to desolvate.

4,605,527

PROCESS FOR PRODUCING CLUTCH FACINGS

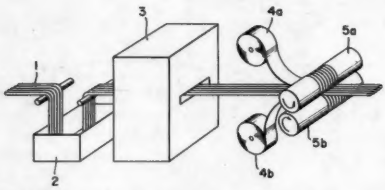
Hirofumi Kamiura, and Takashi Natori, both of Osaka, Japan, assignors to Nippon Valqua Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,381

Claims priority, application Japan, Sep. 24, 1983, 58-176689

Int. Cl.⁴ B29B *11/16*

U.S. Cl. 264—137 **9 Claims**



1. In a process for producing a clutch facing which comprises first causing a thermosetting resin and then a rubber composition to adhere to inorganic fibers, forming a preform therefrom and molding said preform under heat and pressure, the improvement which comprises adding organic fibers to said rubber composition as a processing aid in an amount of from 1 to 15% by weight, based on the weight of the rubber composition, forming said rubber composition containing said organic fibers into a sheet and causing said sheet to adhere to said inorganic fibers without using a hydrocarbon solvent.

4,605,528

PROCESS AND DEVICE FOR PRODUCTION OF PLASTIC SHEETS OF GOOD OPTICAL QUALITY

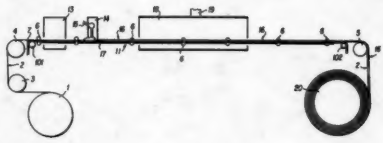
Jean-Marc Petitcollin, Le Plessis Brin, and André Taworski, Cambrone les Ribecourt, both of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed May 25, 1984, Ser. No. 614,120

Claims priority, application France, May 30, 1983, 83 08904

Int. Cl.⁴ B29D *7/01*

U.S. Cl. 264—216 **6 Claims**



1. Process for production of plastic sheets of high optical quality, comprising:

applying a liquid mass comprising a curable plastic composition to a plane mobile support comprising a horizontally taut flexible strip, wherein said flexible strip is passed over two horizontal and longitudinal rectilinear supports, contact of each with said flexible strip being limited approximately to a generatrix, these two rectilinear supports extending over the entire length useful for production and being placed along the side edges of the strip, stretching said strip crosswise on these rectilinear supports in drumhead fashion, advancing said flexible strip and curing said liquid mass whereby said sheets are formed.

4,605,529

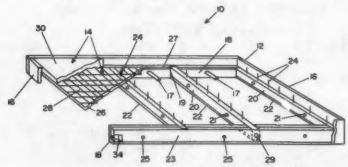
METHOD OF CONSTRUCTING A PREFABRICATED CONCRETE WALL STRUCTURE

Melvin M. Zimmerman, Blue Ball, Pa., assignor to Superior Walls of America, Ltd., East Earl, Pa.

Filed Aug. 5, 1985, Ser. No. 762,379

Int. Cl.⁴ B28B *1/16*

U.S. Cl. 264—263 **4 Claims**



1. A method of constructing a prefabricated wall structure comprising:

orienting concrete studs in a horizontal configuration within a framing means such that the edges of studs which are exposed within the framing means have fasteners protruding from the edges and an essentially horizontal plane is formed by the edges of the studs within the framing means;

laying rigid insulation within the framing means, on top of the edges of the studs by piercing the fasteners through the insulation to form a continuous surface within the framing means;

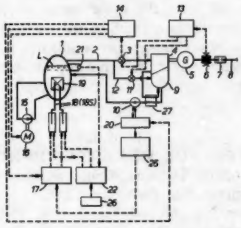
pouring concrete into the enclosure formed by the rigid insulation and the framing means so as to cover the rigid insulation and to enclose the fasteners;
permitting the poured concrete to set; and
removing the finished structure from the framing means.

4,605,530

OPERATING METHOD FOR NUCLEAR POWER PLANTS

Shinichiro Tatemichi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 487,449, Apr. 21, 1983, abandoned. This application Feb. 4, 1985, Ser. No. 697,437
Claims priority, application Japan, May 4, 1982, 57-73368
Int. Cl.[4] G21C 7/06
U.S. Cl. 376—237 2 Claims



1. A method of safely operating a boiling water nuclear reactor power plant upon the occurrence of a failure, said reactor being changeable between several non-failure conditions and a plurality of failure conditions and having control rods for controlling the power level thereof, said control rods including a first group having all rods in the outermost peripheral region of said nuclear reactor and a second group having all rods not in the outermost peripheral region, said method comprising the steps of:

identifying a failure as a failure which occurs outside said power plant;

selecting control rods from said first group that are in a fully withdrawn position and that do not adjoin each other during normal operation;

selecting control rods only from those control rods in said second group which are in a fully withdrawn position and which are spaced from each other at a distance greater than the distance between adjoining rods during normal operation of said nuclear reactor;

said selected control rods from said first group and said second group being selected on the basis that if scrammed, the axial power distribution and natural circulation flow are maintained in a stable condition so that the power plant may operate at a reduced power level;

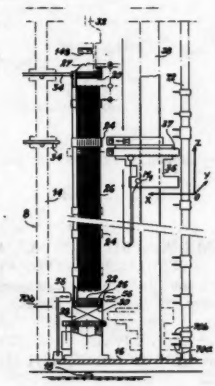
subjecting said selected control rods from said first group and said second group to a scram, whereby the power level of said nuclear reactor power plant is reduced to a power level lower than the normal operating power level but large enough to supply the needs of the power plant itself so that said nuclear reactor power plant can continue operating.

4,605,531

PROCESS FOR EXAMINING A FUEL ASSEMBLY OF A NUCLEAR REACTOR AND AN EXAMINING MACHINE FOR PERFORMING THIS PROCESS

André Leseur, Bures sur Yvette; Pierre Delaroche, Velizy; Robert Saglio, Antony, and Yves Vaubert, Gif sur Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 18, 1982, Ser. No. 442,645
Claims priority, application France, Nov. 25, 1981, 81 22063
Int. Cl.[4] G21C 17/00
U.S. Cl. 376—252 16 Claims



1. A machine for examining a fuel assembly of a nuclear reactor, comprising:

a plate;

a structure mounted on said plate;

a support block pivotably fitted on said plate and on which the fuel assembly is placed vertically;

a carriage slidably fitted on said structure;

means mounted on said carriage for examining the fuel assembly;

guidance means for guiding the fuel assembly with respect to the support block; and

a plurality of safety devices respectively located at a plurality of predetermined levels on said structure, each of said safety devices being positioned at a distance from the fuel assembly and including means for retaining said fuel assembly in an equilibrium position, said means for examining the fuel assembly being displaceable along the complete height of the fuel assembly.

4,605,532

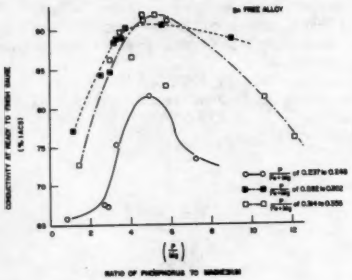
COPPER ALLOYS HAVING AN IMPROVED COMBINATION OF STRENGTH AND CONDUCTIVITY

David B. Knorr, Hamden, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 645,957, Aug. 31, 1984, abandoned. This application Jun. 3, 1985, Ser. No. 740,388
Int. Cl.[4] C22C 9/02
U.S. Cl. 420—472 25 Claims

1. A copper base alloy having a combination of high strength and high conductivity consisting essentially of from about 0.3 to about 1.6% by weight iron, with up to one-half the iron content being replaced by an element selected from the group consisting of nickel, manganese, cobalt and mixtures thereof; from about 0.01 to about 0.20% by weight magnesium; from about 0.10 to about 0.40% by weight phosphorus; up to about 0.5% by weight of an element selected from the group consisting of tin, antimony, and mixtures thereof; and the balance copper; with the proviso that the phosphorus to magnesium

ratio comprises at least about 2.5 and that the ratio of phosphorus to the total content of phosphide formers (magnesium+iron+nickel+manganese+cobalt) ranges from about 0.22 to about 0.49.

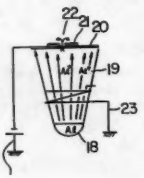


4,605,533

LEAD FRAME COATED WITH ALUMINUM AS A PACKAGING MATERIAL IN INTEGRATED CIRCUITS

Kazunao Kudoh, and Yoshikazu Hashimoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 19, 1985, Ser. No. 725,202
Int. Cl.[4] C22C *38/08*; H01I *21/60*
U.S. Cl. 428—622 **1 Claim**



1. In a lead frame for use in integrated circuits, in which a lead frame comprising an iron-nickel alloy substrate and a packaging ceramic are sealed with low-melting-point glass, the improvement in that both faces and sides of said iron-nickel alloy substrate containing nickel therein in a proportion of 42 to 49% by weight are coated with an aluminum layer of 0.2 to 10 microns thick such that the entire surface of the substrate in contact with the low melting point glass has a chemical layer thereupon.

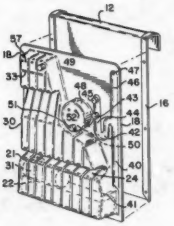
4,605,534

CLEANING AND DISINFECTING SYSTEMS INCLUDING COLOR DISPLAY MEANS

Gilbert K. Meloy, Cincinnati, Ohio, assignor to Twinoak Products, Inc., Plano, Ill.

Filed Nov. 2, 1983, Ser. No. 545,876
Int. Cl.[4] E03D *9/02*; A61L *2/16*
U.S. Cl. 422—37 **7 Claims**

1. In a method for detecting the depletion of a cleaning and disinfectant ingredient in a solution initially containing the ingredient, comprising the steps of locating said ingredient in a dispenser, positioning said dispenser in said solution, locating a solid composition in the dispenser adjacent said ingredient while providing communication within the dispenser between the respective locations of said ingredient and said composition, said composition having a critical porosity from between about 1 to about 10% by volume and comprising a color indicator, and a matrix supporting the color indicator and permitting gradual release of the indicator, amounts of said solution being introduced into said dispenser for contact in the dispenser with both said ingredient and said composition, said ingredient and said indicator being gradually released into the solution whereby a concentrated solution of said ingredient and said indicator is formed in the dispenser, said ingredient having a bleaching tendency relative to said color indicator



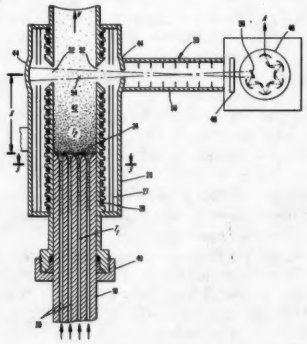
whereby the presence of the ingredient in the solution minimizes the display of color in the solution for as long as significant amounts of said ingredient are present, and whereby solution released from the dispenser is substantially free of color, and wherein continued release of said color indicator after depletion of said ingredient results in a substantial display of color in solution released from the dispenser whereby the depletion of said ingredient can be detected.

4,605,535

APPARATUS FOR MEASURING PARTICLE SIZE

William L. Dimpfl, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 366,236, Apr. 7, 1982, Pat. No. 4,486,535.
This application Aug. 24, 1984, Ser. No. 643,726
Int. Cl.[4] G01N *15/02*
U.S. Cl. 422—95 **19 Claims**



9. An apparatus for measuring the size of incandescently burnable particles in a population of particles suspended in a gas comprising:

means for heating the population of particles to a temperature sufficient to cause incandescent burning of the particles;

a detector for simultaneously detecting the intensity of radiant energy emitted by a plurality of heated burning particles in a detection zone; and

means for providing an output signal, responsive to said detector, related in value to the third derivative of the

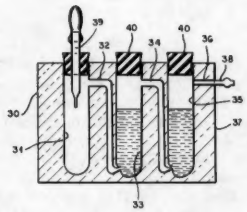
intensity of emitted radiant energy with respect to time, said output signal providing an indication of the size of the detected burning particles in the population.

4,605,536

CUVETTE FOR PROJECTION DISPLAY OF CHEMICAL EXPERIMENTS

Rudi Kuhnert, Halle, and Wolf-Dieter Legall, Merseburg, both of German Democratic Rep., assignors to Veb Metaplast Quedlinburg, Quedlinburg, German Democratic Rep.

Filed May 29, 1984, Ser. No. 614,869
Int. Cl.[4] B01L *3/00*
U.S. Cl. 422—99 14 Claims



1. A cuvette for demonstrating chemical experiments which comprises an elongated rectanguler parallelopipedal block of transparent material formed unitarily with plane-parallel broad surfaces transluminable for projection display and with parallel upper and lower surfaces, said block being formed between said broad surfaces with a plurality of upright vertically elongated compartments, at least one of which is upwardly open of the shape of chemical experiment vessels, spaced apart in said block, means defining in the material of said block at least one elongate passage communicating between said compartments and terminating in lateral or bottom walls of said compartments at opposite ends at respective ones of said compartments, the walls of said compartments and said passage being defined exclusively by said material unitarily with said block, and means on said block for inducing a chemical reaction in at least one of said compartments, all of said compartments opening at said upper surface.

4,605,537

SULFIDE AS A HYPOCHLORITE KILL AGENT

Freddie J. Touro, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

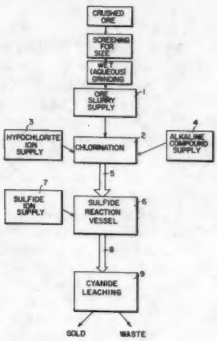
Filed Sep. 17, 1984, Ser. No. 651,087
Int. Cl.[4] B01D *11/00*
U.S. Cl. 423—29 18 Claims

1. A method for extracting precious metal from a precious metal-containing carbonaceous ore or a mixture of precious metal-containing carbonaceous and oxide ores comprising:

(a) chlorinating said ore in an aqueous slurry with a compound that provides hypochlorite ions;

(b) reacting said hypochlorite ions in said aqueous slurry with sulfide ions from a soluble, sulfide ion-providing compound to eliminate said hypochlorite ions remaining in said aqueous slurry; and

(c) leaching said hypochlorite ion-free slurry with a cyanide compound to separate said precious metal from said precious metal-containing carbonaceous ore or said mixture of precious metal-containing carbonaceous and oxide ores.



4,605,538

PRODUCTION OF PURE MOLYBDENUM

Clarence D. Vanderpool, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Aug. 22, 1985, Ser. No. 768,387
Int. Cl.[4] C01G *39/00*
U.S. Cl. 423—55 4 Claims

1. A process for producing pure molybdenum, said process comprising:

(a) contacting a molybdate solution with a true liquid alkaloid that is capable of dissolving in an aqueous solution of molybdenum values when said solution is at a pH of from about 9 to 10 with the amount of the alkaloid being sufficient to form an alkaloid-molybdenum compound with essentially all of the molybdenum;

(b) adjusting the resulting alkaloid-treated solution to a pH of from aout 2 to about 4 to form a precipitate consisting essentially of said compound and a mother liquor;

(c) separating said precipitate from said mother liquor;

(d) dissolving said precipitate in ammonium hydroxide to form a two phase system consisting essentially of an alkaloid phase and a molybdenum phase;

(e) separating said alkaloid phase from said molybdenum phase; and

(f) crystallizing a pure ammonium molybdate compound from said molybdenum phase.

4,605,539

PHOSPHONITRILIC CHLORIDE TRIMER PURIFICATION

J. Robert Adams, Jr.; James R. Mitrano, and Matthew K. Juneau, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 16, 1984, Ser. No. 671,942
Int. Cl.[4] C01B *25/10*
U.S. Cl. 423—300 20 Claims

1. A process for making a polymer-grade cyclic phosphonitrilic chloride trimer, said process comprising

(a) forming a solution of impure cyclic phosphonitrilic chloride in an inert halogenated hydrocarbon solvent,

(b) washing said solution with water,

(c) precipitating crystalline cyclic phosphonitrilic chloride trimer from the water-washed halogenated hydrocarbon solution,

(d) separating said precipitated crystalline cyclic phosphonitrilic chloride trimer from said water-washed solution and

distilling the separated cyclic trimer to obtain said polymer-grade cyclic phosphonitrilic chloride trimer.

4,605,540

LOW VOLATILE FLUORINE PROCESS FOR MAKING ELEMENTAL PHOSPHORUS

John E. Stauffer, 6 Pecksland Rd., Greenwich, Conn. 06830

Filed Nov. 1, 1985, Ser. No. 794,117
Int. Cl.[4] C01B *25/01*
U.S. Cl. 423—322 5 Claims

1. A process for the production of elemental phosphorus by collecting volatilized elemental phosphorus from a molten furnace burden formed by melting phosphorus ore, sand and carbon in an electric furnace, comprising incorporating alkali with the furnace burden in a proportion sufficient in the slag to suppress the formation of volatine fluorine compounds, the alkali being used in an amount equivalent to not less than about 5 to about 15 weight percent Na_2O in the slag.

4,605,541

RECOVERY OF NOBLE METAL VALUES FROM CARBONYLATION RESIDUES USING IMMISCIBLE LIQUIDS

Joseph Pugach, Ridgewood, N.J., assignor to The Halcon SD Group, Inc., Montvale, N.J.

Filed Aug. 26, 1985, Ser. No. 768,992
Int. Cl.[4] C01G *55/00*
U.S. Cl. 423—22 9 Claims

1. A process for recovering rhodium from the high molecular weight residues formed in rhodium-lithium catalyzed carbonylation reactions in which esters and ethers are combined with carbon monoxide in the presence of iodides to form anhydrides, comprising:

(a) separating and concentrating the residue from the carbonylation reaction mixture by removing volatile components thereof;

(b) treating at temperatures above ambient the separated residue of (a) with a mixture of immiscible liquids capable of precipitating a solid containing substantially all of the rhodium content of said residue and consisting of immiscible mixtures of water with aliphatic alcohols or hydrocarbons or mixtures thereof or immiscible mixtures of acetic anhydride with hydrocarbons; and

(c) separating the precipitated solid of (b).

4,605,542

PROCESS FOR PRODUCING SILICON CARBIDE WHISKER

Junzo Harada, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed May 29, 1985, Ser. No. 738,746
Claims priority, application Japan, Jun. 7, 1984, 59-115479
Int. Cl.[4] C01B *31/36*
U.S. Cl. 423—345 14 Claims

1. The process for producing silicon carbide whiskers comprising mixing a silicon source with carbon black to form a reaction mixture and heating said reaction mixture in an inert atmosphere to form silicon carbide whiskers, said silicon source being silica recovered from geothermal hot water having a silica content of from 200 to 1000 ppm.

4,605,543

PREPARATION OF SILANE FROM METHYLDICHLOROSILANE AND CHLOROSILANES

Jean-Luc Lepage, Sainte-Foy-les Lyon, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Filed Sep. 28, 1984, Ser. No. 655,730
Claims priority, application France, Sep. 28, 1983, 83 15405
Int. Cl.[4] C01B *33/04, 33/107;* C07F *7/08*
U.S. Cl. 423—347 24 Claims

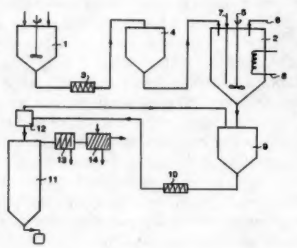
1. A process for the preparation of silane from methyldichlorosilane and trichlorosilane and/or tetrachlorosilane, comprising (A) in a first step, catalytically redistributing methyldichlorosilane with trichlorosilane or tetrachlorosilane, or admixture thereof, to form methyltrichlorosilane and dichlorosilane, and separating dichlorosilane from the resulting reaction medium, and (B) in a second step, catalytically disproportionating the dichlorosilane thus separated to form silane and trichlorosilane, and thence recovering silane thus formed and optionally recycling trichlorosilane to said step (A), the step (A) and step (B) reactions being catalyzed with (i) a quaternary ammonium salt having the formula R'_4NY or a quaternary phosphonium salt having the formula R'_4PY, in which each R', which may be identical or different, is a monovalent hydrocarbon radical and Y is halogen, (ii) a tertiary amine of the general formula NR'R"R"' in which R', R" and R"', which may be identical or different, are monovalent hydrocarbon radicals, (iii) an ion exchange resin containing tertiary amine or quaternary ammonium groups, or (iv) a catalytic system comprising an ionic inorganic salt M^+A^- and a compound which complexes the M^+ cation of said salt.

4,605,544

METHOD FOR PRODUCING SELENIUM SALTS

Arne Björnberg, Skelleftehamn; Ulf S. Martensson, Skellefteå, and Karin M. Paulsson, Skelleftehamn, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE83/00400, § 371 Date Aug. 22, 1984, § 102(e) Date Aug. 22, 1984, PCT Pub. No. WO84/02513, PCT Pub. Date Jul. 5, 1984
PCT Filed Nov. 15, 1983, Ser. No. 644,728
Claims priority, application Sweden, Dec. 22, 1982, 8207344
Int. Cl.[4] C01B *19/00*
U.S. Cl. 423—508 7 Claims



1. A method for producing metal selenate comprising:

(a) dissolving metallic selenium in nitric acid to obtain selenious acid;

(b) reacting the selenious acid with a material selected from the group consisting of alkali metal hydroxide, alkali metal carbonate, metal oxide/hydroxide or mixtures thereof to form metal selenite;

(c) oxidizing the metal selenite with hydrogen peroxide at a temperature of from 60° to 75° C. and maintaining a pH of from 10 to 12 to form metal selenate; and

(d) drying the metal selenate.

4,605,545

METHOD FOR PRODUCING SODIUM DITHIONITE

William B. Darlington, Wadsworth, and Charles H. Hoelscher, Doylestown, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 20, 1985, Ser. No. 736,167
Int. Cl.[4] C01B *17/66*
U.S. Cl. 423—516 20 Claims

1. In the process of producing anhydrous sodium dithionite by reacting a sulfur dioxide-containing formamide solution and

sodium amalgam in a reaction vessel, separating a product formamide solution containing sodium dithionite from the sodium amalgam and precipitating sodium dithionite from such formamide solution by mixing a precipitating agent with such solution, the improvement wherein the precipitating agent is selected from the group consisting of isopropanol and n-propanol.

4,605,546

CATALYTIC PROCESS FOR THE PRODUCTION OF SULFUR FROM A GAS CONTAINING H_2S

Robert Voirin, Orthez, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Jan. 30, 1984, Ser. No. 574,911

Claims priority, application France, Jan. 31, 1983, 83 01446

Int. Cl.[4] B01D *53/36;* C01B *17/04*

U.S. Cl. 423—576 21 Claims

1. A catalytic process for production of sulphur from a gas, known as an "acid gas", containing H_2S, in which the acid gas is contacted, at a temperature between 200° and 1000° C. and in the presence of a H_2S-oxidation catalyst, with a controlled quantity of a gas containing free oxygen in order to form a gaseous effluent containing H_2S and SO_2 in a H_2S to SO_2 molar ratio substantially equal to 2:1 as well as sulphur, then said effluent, after cooling, is contacted with a CLAUS catalyst in order to form a further quantity of sulphur, wherein the H_2S-oxidation catalyst consists of agglomerates having a surface area of at least 5 m^2/g and comprising an active alumina and either:

(a) containing silica as a thermal stabilizer in an amount from 0.5 to 20% by weight of the alumina, to which is associated a compound of iron; or

(b) containing lanthanum oxide and neodymimium oxide as a thermal stabilizer in an amount from 0.5 to 20% by weight of the alumina, to which is associated a compound of iron.

4,605,547

CONTINUOUS HYDROGENATION OF LITHIUM INTO LITHIUM HYDRIDE

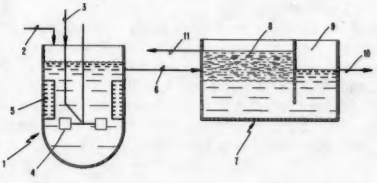
Jean-Yves Dumousseau, Paris; Jean Grosbois, L'Isle Adam, and Serge Jacubert, Viroflay, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Division of Ser. No. 527,834, Aug. 30, 1983. This application Mar. 1, 1985, Ser. No. 707,153

Claims priority, application France, Aug. 31, 1982, 82 14864

Int. Cl.[4] C01B *6/04;* C01F *15/00*

U.S. Cl. 423—646 8 Claims



1. A process for the continuous preparation of lithium hydride, which comprises continuously hydrogenating in a first reaction zone, at elevated temperatures, an agitated intimate admixture of metallic lithium in a mixture of molten salts, continuously discharging the effluent of said hydrogenation reaction to a second zone of decantation, whereby said effluent is separated into a floating light phase essentially consisting of unreacted lithium metal and a heavy phase which comprises product lithium hydride dissolved in said mixture of molten salts, continuously recycling floating light phase back to the hydrogenation reaction zone, continuously withdrawing heavy phase from said zone of decantation, and recovering product lithium hydride from said withdrawn heavy phase.

4,605,548

DRUG ADMINISTRATION MATERIAL

Keiichi Ushiyama, and Hisashi Ichinose, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 498,680, May 31, 1983, abandoned, which is a continuation of Ser. No. 288,957, Jul. 31, 1981, abandoned. This application Jul. 18, 1984, Ser. No. 632,149

Int. Cl.[4] A61L *15/03;* A61K *9/24*

U.S. Cl. 424—15 4 Claims

1. A drug administration material for continuously administering an active drug at a controlled rate through an integument which comprises, in sequence, an adhesive film which comprises a film and a pressure sensitive layer, a barrier layer, a drug-retaining layer, a drug administration layer which continuously feeds an active drug to the integument, and a delaminatible protective film, said drug administration layer comprising a porous membrane containing in pores thereof, a liquid having a limited solubility for the active drug, wherein said liquid is stabily retained in the porous membrane by capillary pressure.

4,605,549

SYNERGISTIC PESTICIDAL COMPOSITIONS OF (S)α-CYANO-3-PHENOXY-BENZYL (1R,CIS) 2,2-DIMETHYL-3-(2,2-DIBROMOVINYL)-CYCLOPROPANE-1-CARBOXYLATE AND (R,S) ALLETHRONYL D-TRANS CHRYSANTHEMATE

Pierre R. Carle, Rognonas, France, assignor to Roussel Uclaf, Paris, France

Continuation of Ser. No. 347,279, Feb. 9, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,146

Claims priority, application France, Feb. 20, 1981, 81 03403

Int. Cl.[4] A61L *9/04;* A01N *25/00, 37/34, 53/00*

U.S. Cl. 424—18 8 Claims

1. An insecticidal composition consisting essentially of a synergistically effective amount of about 1:1 ratio by weight of (S) α-cyano-3-phenoxy-benzyl (1R,cis) 2,2-dimethyl-3-(2,2-dibromovinyl)-cyclopropane-1-carboxylate and (R,S) allethronyl d-trans chrysanthemate.

4,605,550

DELAYED RELEASE FORMULATIONS AND PROCESSES FOR MAKING THEM

Anthony J. Trill, Horsham, England, assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Jun. 5, 1984, Ser. No. 617,576

Claims priority, application United Kingdom, Jun. 6, 1983, 8315476

Int. Cl.[4] A61K *9/16, 9/26, 31/78*

U.S. Cl. 424—22 12 Claims

1. A granular composition having particles of average particle size as determined by sieving in the range 70 to 500 microns the said particles comprising up to 55% of active ingredient having primary particles the maximum dimension (A) of which as determined by microscopy is less than 50 microns and a particulate water soluble extender having an average particle size (B) as determined by sieving in excess of 50 microns, the particles of active ingredient and water soluble extender being held in self-supporting spaced relationship by a water insoluble polymer film matrix providing the balance of the weight of the particle and being less than 50% by weight of the particle.

4,605,551

DRY OIL COATED ANTACID PROCESS

John D. Buehler, Germantown, Tenn.; Hans J. Medal, Fort Washington, and Gregory A. Rhoa, Collegeville, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 30, 1984, Ser. No. 676,634

Int. Cl.[4] A61K *9/42, 33/06, 33/08, 33/10*

U.S. Cl. 424—38 8 Claims

1. In a process for the preparation of oil-coated antacid particles wherein particles of an antacid are contacted with a

mixture of electronegatively charged material in a non-toxic, inert, substantially water insoluble oil, the improvement comprising coating agitating particles of substantially anhydrous antacid with a solvent-free mixture of electronegatively charged material in said oil.

4,605,552

CALCIUM-ANTAGONIST COMPOSITIONS INTENDED FOR INHALATION AND PROCESS FOR THEIR MANUFACTURE

Edgar Fritschi, St. Peter, Fed. Rep. of Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 16, 1984, Ser. No. 631,049

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326089

Int. Cl.[4] A61L *9/04;* **A61K** *31/55*

U.S. Cl. 424—45 **2 Claims**

1. A method for treating angina pectoris which comprises administering to a patient in need thereof, by inhalation, an antianginal effective amount of the calcium antagonist diltiazem.

4,605,553

DRY PRESSED POWDER STICK COMPOSITION AND VEHICLE THEREFOR

Peter Passalacqua, 185 Prospect Ave., Hackensack, N.J. 07601

Filed Jan. 31, 1983, Ser. No. 462,305

Int. Cl.[4] A61K *7/32, 7/38, 7/42, 7/44*

U.S. Cl. 424—59 **18 Claims**

1. In an improved dry pressed powder stick composition consisting essentially of, by weight:

(a) about 1 to 10% of a metal stearate;

(b) about 1 to 10% of an alkaline metal carbonate;

(c) about 10% to 50% of a naturally or synthetically derived cellulose or derivative thereof;

(d) about 0.05% up to 50% of cosmetically active ingredient which is stable in the composition, wherein the improvement comprises about 10% to 60% of aluminum potassium silicate,

said dry pressed powder stick composition formed by mixing all of the above ingredients in a dry blend to form a homogeneous mixture, loading the mixture into a mold, and then applying pressures from about 100 psi to 3000 psi to the mixture in the mold at a temperature from 20° C. to 80° C. for a time sufficient to achieve the pressed stick composition.

4,605,554

ROLL-ON APPLICATION OF AQUEOUS MICROENCAPSULATED PRODUCTS

Samuel B. Prussin, Big Sur, Calif.; Ralph Levine, East Hills, N.Y., and Warren J. Hintz, Coltsneck, N.J., assignors to AE Development Corporation, Minneapolis, Minn.

Continuation of Ser. No. 275,314, Jun. 19, 1981, abandoned. This application Jan. 17, 1985, Ser. No. 692,326

Int. Cl.[4] A61K *7/32, 7/34, 7/36, 7/38*

U.S. Cl. 424—66 **10 Claims**

1. A roll-on deodorant or antiperspirant powdery cream or lotion composition comprising a roll-on system for applying said composition to the axillae of a user comprising in combination:

a container including;

a compartment within the container receiving;

said composition which comprises a stabilized water-in-air suspension including a discontinuous liquid phase comprising small, discrete, stable droplets of aqueous liquid, each droplet of said liquid being coated and stabilized with an interfacial barrier of very fine, hydrophobic metal oxide particles of the formula $_eO\text{-}MR_aX_b$ where e represents the oxide surface; O is oxygen; M is metal selected from the group consisting of silicon, titamium, aluminum, zirconium, vanadium, iron or mixtures thereof, R is an organo group selected from the group consisting of alkyl, aryl, arylalkyl, alkoxy and aryloxy, a is a number from 1 through 3, X is a halogen or hydroxy b is a number from 0 through 2, a+b=3 and containing at least 0.5% by weight of said organo groups, said coated droplets being suspended in an external air phase such that the density is from 0.3 to 1.5 g/cc and the ratio of hydrophobic metal oxide to aqueous liquid being from 1/1 to 50/1 and the suspension including in parts by weight:

25% to 98.9% of aqueous liquid;

1% to 15% hydrophobic metal oxide, and

0.1% to 16% deodorant or antiperspirant compound;

a seat member; and

a rotating member received by solid seat member to define an outlet therebetween through which said suspension is dispersed onto said axillae from said compartment on rotation of said member;

said outlet being sized to apply preselected shear to said suspension in an amount sufficient to at least partially destabilize the suspension to coalesce at least 10% of said droplets into larger droplets.

4,605,555

COMPOSITION AND METHOD FOR TREATING KERATOSIC DISORDER OF SKIN AND MUCOSA

Mitsunobu Sato, Tokushima; Yasuhiro Katsuragi, Toyonaka; Yasuo Sakano, Amagasaki; Kunio Sugihara, Otsu, and Kenji Aimoto, Toyonaka, all of Japan, assignors to Sun Star Kabushiki Kaisha, Takatsuki, Japan

Filed Sep. 20, 1984, Ser. No. 652,465

Int. Cl.[4] A61K *45/02*

U.S. Cl. 424—85 **9 Claims**

1. A method for treating a human subject suffering from lichen planus or leukoplakia which comprises externally applying a pharmaceutical composition comprising an effective amount of human interferon, 15 to 70% by weight of a trihydric of higher polyhydric sugar alcohol, an organic acid buffer and a conventional pharmaceutical carrier or diluent, the pH of the composition being about 3 to 6.

4,605,556

COMPOSITION AND METHOD FOR TREATING ERYTHEMATODES AND MYCOSIS

Mitsunobu Sato, Tokushima; Yasuhiro Katsuragi, Toyonaka; Yasuo Sakano, Amagasaki; Kunio Sugihara, Otsu, and Kenji Aimoto, Toyonaka, all of Japan, assignors to Sun Star Kabushiki Kaisha, Takatsuku, Japan

Filed Sep. 20, 1984, Ser. No. 652,466

Claims priority, application Japan, Sep. 26, 1983, 58-178886

Int. Cl.[4] A61K *45/02*

U.S. Cl. 424—85 **9 Claims**

1. A method for treating a human subject suffering from lupus erythematodes discoides or candidasis which comprises externally applying a pharmaceutical composition comprising

an effective amount of human interferon, 15 to 70% by weight of a trihydric or higher polyhydric sugar alcohol, an organic acid buffer and a conventional pharmaceutical carrier or diluent, the pH of the composition being about 3 to 6.

4,605,557

METHOD OF PRODUCING ALLERGENIC EXTRACTS

Erik Stevens, Linden-Lubbeek, and Ernestina M. Van Hoeyveld, Lubbeek, both of Belgium, assignors to Tetra Consultants, Inc., New Rochelle, N.Y.

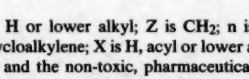
Filed Sep. 7, 1982, Ser. No. 415,567

The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.

Int. Cl.[4] A61K *39/36, 39/00*

U.S. Cl. 424—91 **8 Claims**

1. In a method of producing a systemically administerable allergen containing extract which is suitable for use in the diagnosis or therapeutic treatment of allergic conditions in patients which comprises extracting the allergic material with a suitable solvent and obtaining the allergen containing extract thus produced wherein the improvement comprises adding to the allergic material and solvent mixture a compound of the formula,



wherein Y is H or lower alkyl; Z is CH_2; n is 0 or 1; R is alkylene or cycloalkylene; X is H, acyl or lower alkyl; m is 0 or 1; W is CH_2; and the non-toxic, pharmaceutically acceptable salts thereof, and wherein the compound is present in a concentration of from 0.001 M to 0.5 M.

2. The method of claim 1 wherein the compound is 6-aminohexanoic acid.

3. The method of claim 1 wherein the compound is trans-4(aminomethyl) cyclohexane carboxylic acid.

4,605,558

PROCESS FOR CELL SEPARATION

Wallace Shrimpton, 1015 Grandview Dr., South San Francisco, Calif. 94080

Filed Apr. 20, 1984, Ser. No. 602,461

Int. Cl.[4] A01N *1/02;* **A61K** *35/52, 35/14*

U.S. Cl. 424—105 **4 Claims**

1. In the known process for the separation of X sperm and Y sperm by phenotypic differences in a density separation process wherein sperm are suspended in a nutrient medium having a gradient in density from top to bottom within a vessel, the improvement comprising independently maintaining an osmolality gradient in the nutrient medium within said vessel.

3. The process for the preparation of a medium for the gravity separation of cellular biological material enclosed within a semi-permeable membrane, comprising:

a. providing at least one low density first nutrient medium and adjusting the osmolality to a desired value

b. providing at least one high density second nutrient medium and adjusting the osmolality to a lower value than the osmolality of said first nutrient medium,

c. placing said first and second nutrient media in a vessel to provide a gravity separation means having a high density and a low osmolality at one side and a low density and a high osmolality at the other side.

4,605,559

COMPOUND, FR-900447, PRODUCTION AND USE THEREOF

Yasuhiro Hori, Toyonaka; Motohiro Hino, Ikeda; Hiroshi Terano, Toyonaka; Masashi Hashimoto, Takarazuka, and Masanobu Kohsaka, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 31, 1984, Ser. No. 646,090

Claims priority, application United Kingdom, Sep. 7, 1983, 8324006

Int. Cl.[4] A61K *35/74;* **C12P** *1/06*

U.S. Cl. 424—120 **3 Claims**

1. A compound, FR-900447, or pharmaceutically acceptable salt thereof having the following characteristics as its free form:

(1) has an elementary analysis (%): C59.05; H6.72; N5.57

(2) has a molecular weight: 928 [SIMS: m/z 929 $(M^+ + 1)$]

(3) has a melting point: 85° C. (dec.)

(4) has an optical rotation: $[\alpha]_D^{23°} = +291.4°$ (C=0.675, H_2O)

(5) has a characteristic ultraviolet absorption spectrum:

λ_{max}^{H2O}=276 nm ($E_{1cm}^{1\%}$390) 340 nm (sh) ($E_{1cm}^{1\%}$=80)

$\lambda_{max}^{H2O+HCl}$=272 nm ($E_{1cm}^{1\%}$=400), 330 nm (sh) ($E_{1cm}^{1\%}$=82)

$\lambda_{max}^{H2O+NaOH}$=243 nm ($E_{1cm}^{1\%}$275), 278 nm ($E_{1cm}^{1\%}$=350), 410 nm ($E_{1cm}^{1\%}$=31)

(6) has a characteristic infrared absorption spectrum:

ν_{max}^{KBr}=3400, 2950, 1650, 1560, 1465, 1435, 1395 (sh), 1375, 1280, 1150, 1075, 1040 (sh), 960, 895, 855, 840cm^{-1}

(7) has a characteristic nuclear magnetic resonance absorption spectrum:

δppm (pyridine-d_5): 10.62 (1H, t, J=6Hz), 8.38 (1H, s), 8.14 (1H, s), 6.90 (1H, s), 6.895 (1H, d, J=5 Hz), 6.43 (1H, s), 5.79 (1H, m), 5.80 (1H, d, J=10 Hz), 5.37 (1H, d, J=5 Hz), 4.48 (1H, q., J=6 Hz), 4.15 (1H, m), 3.9 (2H, m), 3.85 (1H, s), 3.63 (1H, t, J=10Hz), 3.47 (1H, m), 3.34 (1H, m), 3.12 (1H, m), 3.08 (2H, m), 3.07 (3H, s), 2.9 (1H, m), 2.82 (2H, m), 2.76 (6H, s), 2.74 (1H, m), 2.50 (6H, s), 2.19 (3H, s), 1.71 (3H, d, J=6Hz), 1.63 (2H, m), 1.62 (3H, d, J=6Hz), 1.47 (3H, d, J=5.4 Hz), 1.20 (3H, s)

(8) is soluble in water, and is sparingly soluble in acetone and methanol, and is insoluble in chloroform, n-hexane and diethyl ether

(9) is positive in color reaction with each of potassium permanganate, iodine vapor and ceric sulfate and is negative in Ehrlich's reaction, reaction with Dragendorff reagent and Molish's reaction

(10) has a characteristic ^{13}C-nuclear magnetic resonance absorption spectrum:

δ(ppm) (pyridine-d^5): 14.2, 17.3, 17.5, 19.4, 22.9, 31.1, 32.2, 33.5, 35.4, 36.1, 36.8, 40.2, 52.1, 55.6, 58.4, 64.6, 64.8, 68.3, 68.5, 70.5, 70.8, 72.2, 76.6, 78.1, 98.5, 107.1, 108.5, 121.6, 124.6, 124.9, 127.6, 131.0, 131.9, 132.4, 133.7, 137.0, 138.8, 155.1, 156.4, 162.5, 166.4, 174.7, 179.8, 187.3.

4,605,560

OVIPOSITIONAL DISRUPTION OF THE NAVEL ORANGEWORM

Robert A. Van Steenwyk, Pleasanton, and William W. Barnett, Clovis, both of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Filed Dec. 4, 1984, Ser. No. 677,841

Int. Cl.[4] A01N *65/00*

U.S. Cl. 424—195.1 **7 Claims**

1. A method for obtaining ovipositional disruption of navel or orangeworm, comprising

permeating the air of an almond orchard area where egg-laying by the moth of the navel orangeworm is expected, by a composition of matter incorporating as an active ingre-

dient an effective amount of a water emulsion of crude almond oil.

4,605,561

FONDANT AND FOOD BARS PRODUCED THEREFROM

Kevin W. Lang, Rivervale, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,596

Int. Cl.[4] A23G *3/00*

U.S. Cl. 426—93 **9 Claims**

1. A polyhydric alcohol-free cooked fondant, which has a moisture content of 10–15%, useful in the production of food bars, produced by cooking, at from 227° to 234° F. for not more than 4 minutes, a mixture comprising:

(a) 15–20% granulated sugar;

(b) 10–35% of a 42–75 DE corn syrup containing from 70 to 81% solids;

(c) 5–25% of a 20–42 DE dextrin;

(d) 5–20% fat;

(e) 15–40% other sweeteners; and

(f) 8–15% added water.

4,605,562

HIGH SPEED EGG BREAKING METHOD

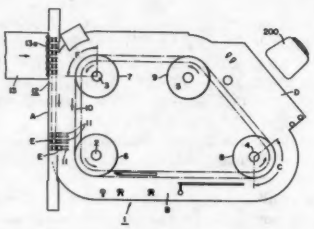
Gen Fujimura; Koichi Sotoma, both of Tokyo; Hiroshi Kunikyo; Masahito Hata, both of Yokohama, and Hidesuke Inoue, Tokyo, all of Japan, assignors to Kewpie Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 493,576, May 11, 1983, Pat. No. 4,534,284. This application Jun. 12, 1985, Ser. No. 731,731

Claims priority, application Japan, May 11, 1982, 57-78747; Jun. 12, 1982, 57-100981; Jun. 20, 1982, 57-110047; Aug. 18, 1982, 57-124087

Int. Cl.[4] A23J *1/09*

U.S. Cl. 426—299 **9 Claims**



1. A high-speed egg-breaking method comprises the steps of:

(a) transporting a multiplicity of shell eggs in successive transverse rows on an infeed conveyor;

(b) transferring each transverse row of shell eggs at one time from the infeed conveyor onto a transfer conveyor, the transfer conveyor extending at a right angle with the infeed conveyor, whereby the successive transverse rows of shell eggs on the infeed conveyor are rearranged into a single longitudinal row on the transfer conveyor;

(c) transferring the single longitudinal row of shell eggs from the transfer conveyor onto respective egg breaker assemblies being carried by a breaker conveyor along the transfer conveyor, the breaker conveyor being arranged to travel endlessly along a predetermined path including a linear portion extending along the transfer conveyor, the transfer conveyor being linearly arranged along the forward end of the infeed conveyor and the linear portion of the breaker conveyor, the shell eggs being transferred from the transfer conveyor onto the egg breaker assemblies while the transfer conveyor and the linear portion of the breaker conveyor are traveling side by side, in the same direction, and at the same speed;

(d) breaking the shell eggs by the egg breaker assemblies for the recovery of the white and yoke therefrom, the white and yoke of the shell eggs being recovered separately in the vertical direction below the breaker assemblies; and

(e) removing the broken egg shells from the egg breaker assemblies.

4,605,563

PROCESS FOR INCREASING THE VISCOSITY OF OILS

Christian Heine, Monheim, and Reinhold Wüst, Kaarst, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 663,018

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340680

Int. Cl.[4] A23D *5/02*

U.S. Cl. 426—607 **4 Claims**

1. A process for increasing the viscosity of, or thickening, oils comprising adding to a low viscosity oil (A) from 1% to 10% by weight, based on the final composition, of a high-melting glyceride of saturated fatty acids having a chain length of from C_{14} to C_{24} and a melting point of above 50° C. to 90° C. selected from the group consisting of monoglyceride of palmitic acid, diglyceride of palmitic acid, triglyceride of palmitic acid, monoglyceride of stearic acid, diglyceride of stearic acid, triglyceride of stearic acid, monoglyceride of hydroxystearic acid, diglyceride of hydroxystearic acid, triglyceride of hydroxystearic acid, monoglyceride of behenic acid, diglyceride of behenic acid, triglyceride of behenic acid and mixtures thereof, and (B) from 2% to 10% by weight, based on the final composition, of a highly dispersed, pyrogenic silica having submicron particles, where the weight ratio of (A) to (B) is between 25:75 and 50:50, and recovering an oil having an increased viscosity.

4,605,564

COATING PROCESS FOR MAKING ANTIMICROBIAL MEDICAL IMPLANT DEVICE

James P. Kulla, Perrysburg, and Norman J. Huff, Swanton, both of Ohio, assignors to Biological & Environmental Control Laboratories, Inc., Toledo, Ohio

Filed Jan. 23, 1984, Ser. No. 572,744

Int. Cl.[4] A01N *1/02*

U.S. Cl. 427—2 **4 Claims**

1. A process for making an antimicrobial medical implant device comprising the steps of:

providing a medical implant device formed of a composition comprising a medical grade polymer or latex;

treating said polymer or latex with a solution of para-chloro-meta-xylenol having a very low solubility in water and aqueous body fluids, with the para-chloro-meta-xylenol dissolved in an organic solvent to cause swelling of the polymer or latex;

thereafter removing the solvent from the solution to trap or precipitate the para-chloro-meta-xylenol in the polymer or latex structure;

whereby the para-chloro-meta-xylenol is impregnated within the structure of the polymer or latex.

4,605,565

METHOD OF DEPOSITING A HIGHLY CONDUCTIVE, HIGHLY TRANSMISSIVE FILM

Prem Nath, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 9, 1982, Ser. No. 448,139

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—39 **13 Claims**

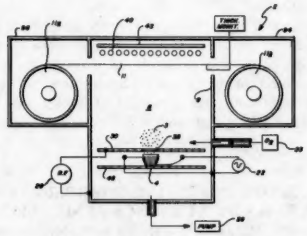
1. An improved method of depositing a thin, light transmissive, electrically conductive film onto a substrate said method consisting essentially of the steps of:

vacuumizing a chamber;

supporting an electrically conductive substrate in the chamber;

providing a source of metallic material, the oxide of said metallic material being conductive when deposited as a film by the subsequent process steps;

evaporating the metallic material in the vacuumized chamber for producing a metallic vapor in the zone formed between the substrate and the source of metallic material;



introducing oxygen gas into the zone;

disposing an r.f. powered cathode adjacent the source of metallic material; and

energizing the cathode to develop an ionized plasma from the oxygen gas atoms introduced into the zone and the metallic atoms evaporated into the zone, whereby a conductive metal oxide film is deposited onto the substrate.

4,605,566

METHOD FOR FORMING THIN FILMS BY ABSORPTION

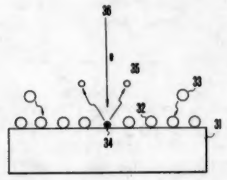
Shinji Matsui; Susumu Asada, and Katsumi Mori, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 22, 1984, Ser. No. 643,194

Claims priority, application Japan, Aug. 22, 1983, 58-152713; Aug. 31, 1983, 58-159814

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—43.1 **9 Claims**



1. A method of forming a film on a substrate, comprising the steps of:

placing the substrate in an atmosphere of gas containing molecules of a material that, upon decomposition, yield an element for forming a film on the substrate;

allowing said molecules to be absorbed by the substrate; and

decomposing said molecules into said element and a volatile material at patternwise locations on said substrate by irradiating said patternwise locations with an electron beam;

whereby said element forms a film on said predetermined portions of said substrate and said volatile material is discharged from said substrate.

4,605,567

CROSSLINKABLE ORGANOPOLYSILOXANES AND A METHOD FOR PREPARING THE CROSSLINKABLE ORGANOPOLYSILOXANES

Johann Müller; Christa Trieschmann, and Gerhard Preiner, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1985, Ser. No. 781,168

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1984, 3447457

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—54.1 **18 Claims**

1. Crosslinkable organopolysiloxanes having the formula selected from the group consisting of

$$A_xR_{3-x}SiO(SiR_2-_xA_xO)_nSiR_{3-x}A_x$$

and

$$(SiR_2-_xA_xO)_y,$$

where R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical and a monovalent aliphatic radical containing carbon, hydrogen, ether oxygen and fluorine atoms; A represents a SiC-bonded organic radical containing a carboxyl group and a carbonyl group to which is bonded an organic radical having at least one terminal carbon-carbon double bond; n is an integer having a value of at least 1; x is 0 or 1; and y is an integer having a value of from 3 to 10, in which the organopolysiloxanes contain at least one radical A per molecule.

4,605,568

APPLICATION OF FOAM TO IMPROVE FLOW CHARACTERISTICS OF WATER-INSOLUBLE PRODUCTS

Alfred E. Kober, Bridgewater, N.J., assignor to Apollo Technologies Int'l Corp., Morris Plains, N.J.

Filed May 2, 1985, Ser. No. 729,804

Int. Cl.⁴ B05D *7/00*; C09K *3/00*

U.S. Cl. 427—220 **15 Claims**

1. The method of improving the flow characteristics of a mass of wet, water-insoluble solid particles having a size of approximately 4 mesh or larger which comprises (a) applying to said particles a foam of a substance having the property of improving the flow characteristics of said particles when applied in a non-foamed condition, said substance being selected from the group consisting of methyl and dimethyl napthalene sulfonates and ethoxylated linear secondary (C_{11}–C_{15}) alcohols, said water solution having a low viscosity, a high flash point and low toxicity, and (b) causing said mass of particles to flow from one location to another, whereby caking tendencies of the wet particles are inhibited, and freedom of flow of said particles between said locations is enhanced to a substantially greater degree than if said substance had not been applied as a foam.

4,605,569

METHOD AND APPARATUS FOR PANEL WIPING OPERATION

Yoshitaka Shimada, Yokohama; Kimihiro Kadowaki, Musashimurayama, and Teruo Inouchi, Izumiotsu, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Sunrise Meisei Corporation, Sakai, both of, Japan

Filed Nov. 21, 1983, Ser. No. 553,995

Claims priority, application Japan, Nov. 25, 1982, 57-205385; Nov. 25, 1982, 57-205386; Nov. 25, 1982, 57-206602

Int. Cl.⁴ B05D *5/00, 1/28*; B05C *11/00*; B25J *9/00*

U.S. Cl. 427—256 **16 Claims**

1. A method of performing repetitive cycles of panel coating operation using a programmable manipulator including a manipulator arm movable along a plurality of axes, said manipula-

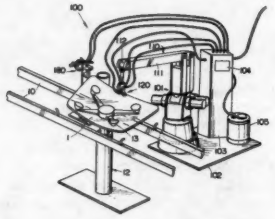
tor arm carrying thereon a hand unit holding a coating brush, comprising the steps of:

(a) moving said manipulator arm by means of a program into a position where said coating brush comes into resilient contact with an area of said panel to be coated;

(b) injecting coating material into said brush at a predetermined rate;

(c) holding said brush in resilient, sliding contact with said panel, while moving said manipulator arm by means of said program about said panel to coat a preselected area of said panel; and

(d) moving said manipulator arm by means of said program to move said brush out of contact with said panel when said preselected area is coated.



6. An apparatus for perfoming repetitive cycles of panel coating operation using a programmable manipulator including a manipulator arm movable along a plurality of axes and control means for controlling movement of said manipulator arm as programmed during an initial teaching operation, comprising:

(a) a hand unit carried on said manipulator arm for movement in unison therewith, said hand unit holding a coating brush;

(b) said control means including means for controlling movement of said manipulator arm to slide the coating brush on an area of a panel which requires coating; and

(c) a coating supplier for supplying a coating material at a predetermined rate to the coating brush during the sliding movement of the coating brush on the panel.

4,605,570

EPOXY-PHOSPHATE CERAMIC COMPOSITIONS AND METHODS OF PREPARATION

Richard E. Felter, East Hempfield Township, Lancaster County, and Dean A. Markley, Mountville, both of Pa., assignors to Armstrong Wor'd Industries, Inc., Lancaster, Pa.

Filed Aug. 9, 1985, Ser. No. 763,999

Int. Cl.[4] C08K *3/34, 3/32;* B05D *3/02*

U.S. Cl. 427—386 **36 Claims**

25. A process for preparing a coated substrate, said process comprising the steps of

selecting an epoxy resin and components suitable to provide a rigid, water-resistant phosphate ceramic material, said components comprising phosphoric acid, a metal oxide and calcium silicate;

intermixing said resin and said components to provide a substantially uniform coating composition;

disposing said composition on a substrate to be coated;

permitting said composition to self-cure on said substrate; and

optionally, applying a post-cure heat treatment to completely cure said composition.

4,605,571

PROCESS FOR IMPROVING ABRASION RESISTANCE OF TEXTILE BELTS

Akio Watanabe, Kyoto, and Sumio Goto, Moriyama, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Feb. 14, 1985, Ser. No. 701,524

Claims priority, application Japan, Feb. 17, 1984, 59-29085

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—387 **9 Claims**

1. A process for improving the abrasion resistance of a textile belt which comprises treating a textile belt with an aqueous composition consisting essentially of a water-soluble or water-dispersible and heat-reactive blocked urethane prepolymer having an organosiloxane structure, and subjecting the treated textile belt to a heat treatment.

4,605,572

PROCESS FOR INHIBITING CORROSION OF STEEL MATERIALS BUILT IN INORGANIC MATERIALS

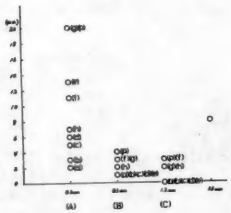
Kazuo Omata, Ichikawa; Toshihiko Shimizu, Narashino; Hiroshi Ibe, Higashikurume, and Kenji Hara, Chiba, all of Japan, assignors to Onoda Construction Materials Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1985, Ser. No. 711,117

Claims priority, application Japan, Mar. 29, 1984, 59-59351

Int. Cl.[4] B05D *1/36*

U.S. Cl. 427—403 **5 Claims**



1. A process for inhibiting corrosion of steel materials built in inorganic materials, which comprises subjecting the surface of an inorganic material having a steel material built therein by applying an aqueous solution of calcium nitrite which has a corrosion-inhibiting effect on said steel material to the surface of the inorganic material to impregnate said inorganic material with the solution.

4,605,573

METHODS AND APPARATUS FOR APPLYING A FINISH LIQUID TO A BUNDLE OF FILMENTARY MATERIAL

Martin H. G. Deeg, Maplewood; Gunilla E. Gillberg-LaForce, Summit, and Alan Buckley, Berkeley Heights, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 11, 1985, Ser. No. 700,563

Int. Cl.[4] B05D *1/00*

U.S. Cl. 427—424 **14 Claims**

1. A method for applying a finish liquid to a bundle of running filamentary material, said method comprising the steps of:

running said bundle of filamentary material in monolayer form through a common passage,

conducting finish liquid under pressure through a supply duct and into at least two side-by-side capillaries which communicate with said duct and are each less than 0.06 inches in diameter and which are separated by a divider wall which terminates short of outlet ends of said capillaries whereby said outlet ends of said capillaries define part of a common slot, said slot being elongate transversely of the direction of travel of said filamentary material through

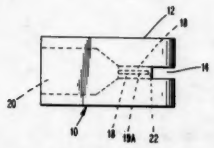
said passage and having a cross-sectional area greater than the combined cross-sectional areas of said capillaries,

liquid finish being discharged from said slot and onto the running monolayer of filamentary material.

7. An applicator for applying a finish liquid to a bundle of running filamentary material, said applicator comprising:

housing means having a passage formed therein, the width of said passage being at least as great as the sum of the diameters of the filamentary material so that the filamentary material forms a monolayer while running through said passage,

a supply duct, at least two capillaries extending side-by-side



through said housing means, said capillaries each having an inlet end communicating with said supply duct for receiving therefrom finish liquid under pressure and an outlet end, said capillaries being separated by divider wall means which terminates short of outlet ends of said capillaries such that said outlet ends define part of a common slot from which the finish liquid is discharged onto the running monolayer of filamentary material, said capillaries each having a diameter less than 0.06 inches, and said slot being elongate transversely of the direction of travel of said filamentary material through said passage and having a cross-sectional area greater than the combined cross-sectional areas of said capillaries.

4,605,574

METHOD AND APPARATUS FOR FORMING AN EXTREMELY THIN FILM ON THE SURFACE OF AN OBJECT

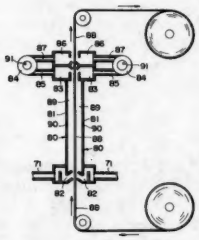
Takashi Yonehara, 26-3, Ontamachi 5-chome, Higashimurayama-shi, Tokyo, and Kanji Hayashi, 10-2, Omorihoncho 2-chome, Ota-ku, Tokyo, both of Japan

Filed Aug. 30, 1982, Ser. No. 412,988

Claims priority, application Japan, Sep. 14, 1981, 56-143817; Oct. 6, 1981, 56-159251; Nov. 5, 1981, 56-164354[U]; Nov. 16, 1981, 56-169468[U]; Dec. 12, 1981, 56-183102[U]; Mar. 17, 1982, 57-40842; Apr. 12, 1982, 57-51830[U]; Apr. 12, 1982, 57-51831[U]

Int. Cl.⁴ B05D *1/02, 1/04*

U.S. Cl. 427—424 **1 Claim**



1. A method for the surface treatment of an object comprising dissolving a small quantity of surface active agent consisting of fluorine surfactant in a solvent along with a treatment agent to form a solution having a surface tension of less than 30 dyne/cm, passing ultrasonic waves through the solution to form an aerosol above the surface of the solution having a uniform particle size of less than 5 μm, drawing the aerosol above the solution to a treatment chamber, passing the object through the treatment chamber to bring the object into contact with the aerosol to form a thin film of less than 400 nm thick on the object, the treatment chamber being elongated, the object to be treated being elongated, passing the object to be treated through the elongated treatment chamber while heaving a gap between at least one side of the object and the treatment chamber, supplying aerosol to an end of the treatment chamber which is upstream of the direction of movement of the object through the treatment chamber, introducing air into the treatment chamber for diluting the aerosol therein downstream of the point where the aerosol is being supplied to the treatment chamber, at a downstream end of the treatment chamber, removing the aerosol from the treatment chamber, diluting the aerosol with air and returning the diluted aerosol to the treatment chamber near the downstream end of the treatment chamber.

4,605,575

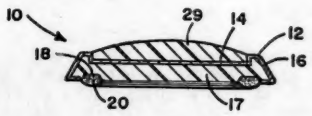
DECORATIVE EMBLEMS

David L. Auld, and Robert E. Waugh, both of Columbus, Ohio, assignors to The D. L. Auld Company, Columbus, Ohio

Continuation of Ser. No. 158,957, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 968,280, Dec. 11, 1978, abandoned. This application Apr. 25, 1985, Ser. No. 727,364

Int. Cl.⁴ A47G *35/00;* **A60R** *13/04*

U.S. Cl. 428—14 **4 Claims**



1. A complete, capped decorative emblem for attachment to an intended surface such as an automobile or appliance comprising a lens cap formed on a shaped foil substrate by the steps of:

(a) printing a decorative design on the upper surface of a foil substrate;

(b) forming said foil substrate into an emblem shape with an integral bezel peripherally around said decorative design;

(c) casting a fluent plastic material directly onto said upper surface of said foil so that it completely cover said decorative design and forms a meniscus-shaped lens cap within said peripheral bezel; and

(d) curing said fluent plastic so that it gives a lens effect to said decorative design beneath it.

4,605,576

MULTILAYER PLASTIC ARTICLES

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 22, 1984, Ser. No. 663,636

Int. Cl.⁴ B27N *5/02*

U.S. Cl. 428—35 **30 Claims**

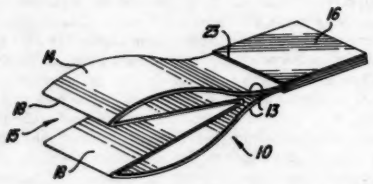
1. A multilayer plastic structure comprising a laminate of at least one layer of a high gas barrier polymer and at least one layer of an intimate blend of at least one propylene based polymer and at least one linear low density polyethylene wherein the total amount of the linear low density polyethylene is equal to or less than about 30 percent by weight of said blend, the structure having an outstanding balance of properties including gas barrier resistance including permeability to oxygen of not more than 3 cc-mil/100 sq. in. day, resistance to delamination, top load strength and low temperature drop impact resistance according to ASTM test 2463-74.

4,605,577

DOUBLE-FACED ADHESIVE TAPE SECURING SYSTEM AND METHOD OF USING SAME

Steven H. Bowytz, 146 Slater Dr., Pittsburgh, Pa. 15236

Filed Mar. 19, 1985, Ser. No. 713,614
Int. Cl.[4] B32B *7/06, 7/10, 31/04*
U.S. Cl. 428—40 12 Claims



1. A packaging system for double-faced adhesive tape, comprising:

means for covering both adhesive faces of the tape said covering means including a non-stick coating and comprising a strip of material folded in a W-shape to form a pocket for receiving the double-faced adhesive tape; and

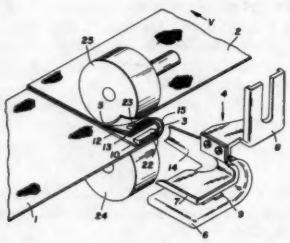
means connected to the covering means for removing said covering means from both faces of the tape simultaneously.

4,605,578

METHOD AND APPARATUS FOR CONNECTING TOGETHER MATERIAL PLIES WHICH ARE UNILATERALLY THERMOPLASTICALLY COATED

Reinhard Emrich, Kaiserslautern, and Kurt Appel, Reichenbach-Steegen, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Division of Ser. No. 611,411, May 17, 1984, abandoned. This application Sep. 7, 1984, Ser. No. 648,697
Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318471
Int. Cl.[4] B32B *3/04, 3/06, 7/10, 7/14*
U.S. Cl. 428—57 4 Claims



1. A fabric material connection for clothing comprising a first ply having a bottom which is coated with a thermoplastic and being folded along one edge upon itself to form a pocket, a thermoplastic strip folded lengthwise to form two leg portions and positioned in said pocket and a second ply having an edge portion overlying the folded-over portion of the first ply which is coated with a thermoplastic material on its overlying portion and is heat-sealed to said folded-over portion of said second ply and said strip and said folded-over portion are heat-sealed to the underlying portion of said first ply, said two leg portions of said strip being in direct contact with each other and heat sealed to each other.

4,605,579

DECORATIVE HEAT RETAINING PIZZA COVER

Michael Armeno, 508 E. Lincoln Ave., Cranford, N.J. 07016, and Ralph L. Parla, 4080 E. Ridgewood Ave., Las Vegas, Nev. 89120

Filed Aug. 19, 1985, Ser. No. 766,524
Int. Cl.[4] B65D *51/00*
U.S. Cl. 428—66 6 Claims

1. A cover for a pizza of the type which is baked so as to have a relatively soft inner portion and a relatively hard crust surrounding the soft inner portion, characterized by:

a top member substantially the size and shape of the soft inner portion;

a plurality of standoffs integral with the top member and engaging the soft inner portion just before the hard crust so as to support the top member above the soft inner portion; and

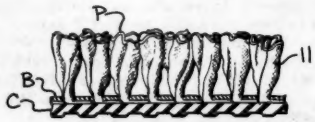
the cover being of a material having a relatively low heat transfer characteristic, whereby the cover tends to retain heat within the pizza which has been imparted to the pizza when said pizza is baked.

4,605,580

PILE FABRIC FORMED FROM FABRIC STRIPS

Thomas C. Goolsby, Dalton, and Dock Sanford, Ellijay, both of Ga., assignors to Cannon Rug Company, Dalton, Ga.

Filed Aug. 23, 1985, Ser. No. 768,860
Int. Cl.[4] B32B *3/02, 33/00*
U.S. Cl. 428—92 11 Claims



1. A tufted pile fabric comprising a backing and a plurality of fabric strips tufted into said backing and forming a pile surface on one face of said backing, said fabric strips each including a base portion of condensed strand configuration penetrating the backing and an upstanding cut pile tuft portion extending from said one face of said backing of uncondensed strip-like configuration.

4,605,581

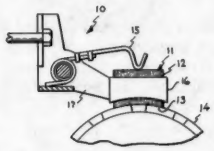
METHOD OF TREATING A CARBON CURRENT COLLECTION BRUSH BLANK AND BRUSH RESULTING THEREFROM

Robert W. Stevens, Bartonville, Pa., and Mark Markovitz, Schenectady, N.Y., assignors to General Electric Company, Salem, Va.

Filed Aug. 20, 1985, Ser. No. 767,397
Int. Cl.[4] B44D *1/20, 1/46*
U.S. Cl. 428—96 43 Claims

32. A current collection brush for use with dynamoelectric machines comprising a carbon brush blank impregnated with

the combination of an organometallic compound and an organic resin wherein the impregnating materials constitute



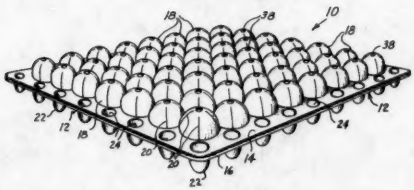
approximately one to nine percent of the total weight of the brush.

4,605,582

BODY SUPPORT PAD

Ralph M. Sias; Nancy J. Hurley, both of North Hollywood, Calif., and Melvin W. Dalebout, Salt Lake City, Utah, assignors to American Hospital Supply Corporation, Deerfield, Ill.

Filed May 23, 1985, Ser. No. 737,373
Int. Cl.[4] A61G *7/02*; A47C *27/22*
U.S. Cl. 428—120 **34 Claims**



1. A body support pad comprising:
a generally planar flexible base member having an upper surface and a lower surface;
a plurality of pillar means extending outwardly from the lower surface and arranged in discrete arrays of pillar means of substantially similar character for substantially evenly contacting any supportive surface upon which the pad is placed while a body is supported on the pad and for providing different resistive forces in each of such discrete arrays of pillar means; and
a plurality of pod means extending outwardly from the upper surface and arranged in discrete arrays wherein each array of pod means provides different resistive forces to the body but wherein such resistive forces are applied generally normal to the body and wherein the pod means are axially offset from the pillar means on the respective upper and lower surfaces.

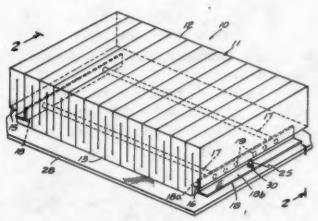
4,605,583

HEAT INSULATING MODULE FOR A HIGH TEMPERATURE CHAMBER

Carl E. Frahme, Canyon Country, Calif., assignor to Industrial Insulations, Inc., City of Industry, Calif.

Filed Jul. 30, 1984, Ser. No. 635,974
Int. Cl.[4] B32B *3/02*; E04B *1/62, 1/80*
U.S. Cl. 428—126 **7 Claims**

1. A heat insulating module for use in lining a high temperature chamber comprising:
a blanket of refractory fibers folded into a plurality of adjacent layers interconnected along the lateral edges of said layers by folds the outermost portions of alternate ones of which folds lie generally in spaced apart first and second parallel planes;
the opposite ends of said folded blanket spaced inwardly from the first one of said planes;
a plurality of L-shaped module mounting members having a first leg of each extending crosswise of a respective end of said blanket and a second leg of each lying coplanar with the interface between a respective adjacent pair of said blanket layers;
a plurality of tie members extending crosswise of said blanket layers and through a respective opening in said second legs of said L-shaped members and secured against disassembly therefrom and having a length effective to hold the layers of said blanket traversed thereby snugly pressed together; and



said first legs of said L-shaped mounting members lying generally coplanar with said first plane and provided with fastener means for securing said mounting members to a chamber side including a plurality of studs provided along one end thereof with a ring of low-height sharp edged axial flutes, said one end of said studs being rigidly securable normal to the inner wall of a high temperature chamber, and said first leg of said mounting members having an opening to receive said studs, and ring-like retainer means adapted to be forcibly assembled over said flutes and cooperating therewith to hold said mounting members assembled thereto.

4,605,584

DECORATIVE MATERIALS COMPRISING CRINKLED CHIPS

Richard E. Herr, Jr., Lancaster; William J. Kauffman, Penn Township, Lancaster County, and Cheryl W. Landers, Mountville, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 3, 1984, Ser. No. 677,819
Int. Cl.[4] B32B *3/00, 27/08, 27/20, 27/22*
U.S. Cl. 428—142 **15 Claims**

1. A compounded mottle derived from
(a) a chip material having a substantially smooth reflective surface and exhibiting pearlescent or metallic properties, said chip material being large enough to be retained on a 25-mesh screen (U.S. Standard) but being not greater than about 0.25 inch in diameter and being derived from a particulate material having reflective or pearlescent properties, a millable general purpose resin, and a plasticizer;
(b) a particulate vinyl resin, and
(c) a plasticizer, said particulate resin and proportions of (a), (b) and (c) being selected such that said mottle is amenable to processing at 300° F. to provide a transparent vinyl matrix wherein said chips exhibit an enhanced crinkled appearance relative to the appearance of the uncompounded chips, said mottle being in a loose, unconsolidated form.

7. A surface covering comprising enhanced visual effects, said covering comprising a consolidated compounded mottle comprising chips which exhibit a crinkled appearance, said mottle being derived from
(a) a chip material having a substantially smooth and reflective surface and exhibiting pearlescent or metallic properties, said chip material being large enough to be retained

on a 25-mesh screen (U.S. Standard) but being not greater than about 0.25 inch in diameter and being derived from a particulate material having reflective or pearlescent properties, a millable general purpose resin, and a plasticizer;

(b) a particulate vinyl resin, and

(c) a plasticizer, said particulate resin and proportions of (a), (b) and (c) being selected such that said mottle is amenable to processing at 300° F. to provide a transparent vinyl matrix wherein said chips exhibit an enhanced crinkled appearance relative to the appearance of the uncompounded chips, said surface covering being in consolidated sheet form.

4,605,585

FORMING FABRIC

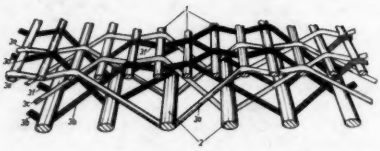
Arne B. Johansson, Halmstad, Sweden, assignor to Nordiskafilt AB, Halmstad, Sweden

Filed Apr. 4, 1983, Ser. No. 481,901

Claims priority, application Sweden, Apr. 26, 1982, 8202578

Int. Cl.⁴ B01D *39/08;* **D03D** *15/00;* **D21F** *7/08*

U.S. Cl. 428—224 **5 Claims**



1. An improved open mesh fabric for papermaking cellulose and similar machines, said fabric comprising:

a first system of synthetic yarns, said first system forming a layer which in position of use of said fabric faces the material to be formed;

a second system of synthetic yarns, said second system forming a layer which in position of use of said fabric faces the dewatering elements of said machine;

a third system of synthetic yarns in cross direction to said first and second systems, said third system interwoven with and interconnecting said first and second systems; and

said third system consists of pairs of first and second yarns, said first and second yarns of each said pair together and alternately forming a pattern in the same phase in the face of said fabric which in position of use is to face the material to be formed and with first and second yarns of other pairs of adjoining yarns form a regular pattern when woven with said first system.

4,605,586

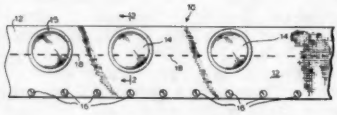
FIRE RESISTANT OIL SPILL BARRIER

Peter Lane, Orchard Park, N.Y., assignor to Globe International Inc., Buffalo, N.Y.

Filed Jul. 1, 1985, Ser. No. 750,292

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—240 **7 Claims**



1. A fire-resistant, portable, barrier for the containment of marine oil spills, which comprises;

(A) a continuous length of a fire-resistant fabric comprising interwoven yarns of heat-resistant material, coated with a liquid-impermeable film;

said fabric being impermeable to a hydrocarbon petroleum oil;

(B) a plurality of buoyant bodies attached to said fabric in a quantity and at positions sufficient to buoy the length of fabric on a body of water; and

(C) means for stabilizing the length of fabric when buoyed upon said body of water.

4,605,587

FLUOROCHEMICAL COMPOSITION FOR COATING SOIL RESISTANT YARN

Robert H. Thomas, Columbia, S.C.; Willis B. Hammond, Chatham, N.J.; Michael P. Friedberger, and William A. Archie, both of Petersburg, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

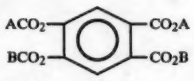
Filed Feb. 19, 1982, Ser. No. 350,544

Int. Cl.⁴ B32B *7/00;* **C07C** *69/76;* **D06M** *13/34*

U.S. Cl. 428—265 **17 Claims**

1. A composition of matter comprising 90 to 50 percent by weight of fluorocarbon compounds of a mixture of meta and para pyromellitates having the structure

I.

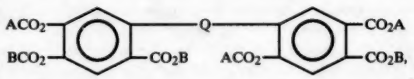


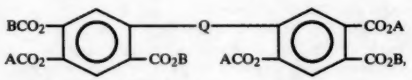
and

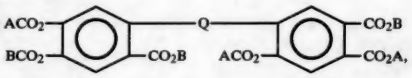
II.

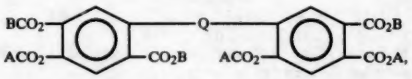
and 10 to 50 percent by weight of fluorocarbon compounds of a dimer of the same pyromellitates selected from the group consisting of

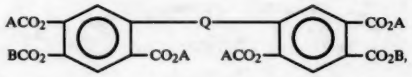
III.

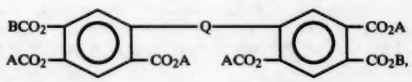












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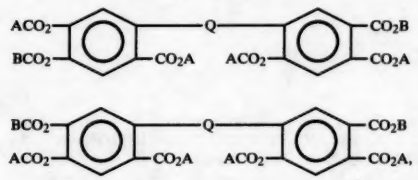
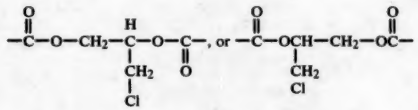


and mixtures thereof, wherein Q is



wherein A is $(CH_2)_2(CF_2)_nCF_3$ where n is 5 to 13 and B is $CH_2CHOHCH_2Cl$, and/or

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4,605,588

BARRIER COATED CERAMIC FIBER AND COATING METHOD

Frederick H. Simpson, Seattle, and Juris Verzemnieks, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 14, 1985, Ser. No. 711,898

Int. Cl.[4] D04H *1/58;* B32B *9/00*

U.S. Cl. 428—288 **24 Claims**

1. A method for coating a ceramic fiber that contains boron with boron nitride comprising the step of heating the fiber in the presence of a nitriding atmosphere to diffuse boron in the fiber to the fiber surface without forming liquid boron oxide or boric acid that can degrade the fiber and to react the boron at the surface with a suitable source of nitrogen in the atmosphere, the reaction occuring at a temperature of at least about 2200° F.

4,605,589

VINYL ACETATE-ETHYLENE COPOLYMER BINDER EMULSIONS FOR MEDICAL-SURGICAL NONWOVEN FABRICS

Gus G. Orphanides, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 25, 1984, Ser. No. 664,816

Int. Cl.[4] C08L *23/08, 31/04, 29/04*

U.S. Cl. 428—290 **22 Claims**

1. A vinyl acetate-ethylene copolymer binder emulsion for nonwoven products comprising an aqueous colloidal dispersion of a copolymer containing 50 to 80 wt % vinyl acetate and 20 to 50 wt % ethylene, based on monomers, prepared by the emulsion polymerization of the vinyl acetate and ethylene monomers in the presence of a stabilizingly effective amount of a stabilizing composition consisting essentially of a polyvinyl alcohol which is 50 to 99 mole % hydrolyzed and has about a 100 to 375 degree of polymerization.

4,605,590

RUBBER/METAL COMPOSITES

Jean-Marc Delseth, Gembloux; Albert F. Devaux, Mont Saint Guibert, and Eric R. Lynch, Brussels, all of Belgium, assignors to Monsanto Europe S. A., Brussels, Belgium

Filed Aug. 12, 1985, Ser. No. 764,706

Claims priority, application United Kingdom, Aug. 23, 1984, 8421432

Int. Cl.[4] B32B *15/06, 25/12;* B60C *9/04*

U.S. Cl. 428—295 **16 Claims**

1. A rubber/metal composite comprising a sulphur-vulcanisable rubber composition containing sulphur and a vulcanisation accelerator, a component having a metal surface in contact with the composition and, as a rubber/metal adhesion promoter, a compound having the formula

$$[^-O_2C\ CH_2S—B—S\ CH_2CO_2^-]\ M^{++}$$

or a hydrate thereof, where B represents a divalent organic radical and M represents cobalt or nickel.

16. An article in which vulcanised rubber is bonded to a metal, the article having been obtained by heating a composite according to claim 1 to vulcanise the rubber.

4,605,591

THERMOPLASTIC RESIN FILM LAMINATE AND PRODUCTION THEREOF

Katsuhiko Nose; Hajime Suzuki, both of Ohtsu, and Osamu Makimura, Ohgaki, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1984, Ser. No. 664,199

Claims priority, application Japan, Oct. 27, 1983, 58-202015; Dec. 16, 1983, 58-238358; Dec. 28, 1983, 58-249947

Int. Cl.[4] B32B *27/08, 27/36*

U.S. Cl. 428—332 **12 Claims**

1. A thermoplastic resin film laminate which comprises a thermolastic resin film and a layer of a polyester resin composition provided on at least one surface of the film, said composition consisting essentially of

(A) a water-insoluble polyester copolymer of a mixed dicarboxylic acid component composed of 0.5 to 15 mole% of a dicarboxylic acid having a metal sulfonate group and 85 to 99.5 mole % of aromatic dicarboxylic acid having no metal sulfonate group reacted with a glycol component;

(B) inert particles having an average particle size of 0.01 to 10 microns;

the weight ratio of (A)/(B)=100,000/0.5–3,000.

4,605,592

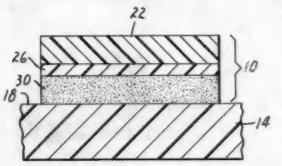
COMPOSITE DECORATIVE ARTICLE

Susan Z. Paquette, Saint Paul, and Dennis O. Falaas, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 409,496, Aug. 19, 1982, abandoned. This application Apr. 4, 1984, Ser. No. 596,627

Int. Cl.[4] C09J *7/02;* B32B *27/40*

U.S. Cl. 428—334 **20 Claims**



1. A composite decorative article adapted for adherence to vinyl substrates containing migratable plasticizers, comprising:

(1) a first layer comprising a polyvinyl chloride film;

(2) a second layer of plasticizer tolerant pressure-sensitive

adhesive comprising the reaction product of reactants comprising (a) acrylic acid and/or methacrylic acid and-/or acrylamide, and/or methacrylamide (b) an alkylacrylate and/or alkylmethacrylate having at least 4 carbon atoms and wherein the carbon atom attached to the oxy atom of the carbonyloxy group has at least one hydrogen atom attached thereto, and (c) at least one additional ethylenically unsaturated monomer; and

(3) a third layer between said first and second layers, said third layer adapted to inhibit migration of vinyl plasticizers through said third layer, said composite decorative article being wrinkle resistant and said adhesive being capable of providing an adherent bond to said vinyl substrate.

18. A method for marking a vinyl substrate having migratable plasticizers associated therewith, said method comprising bonding to said substrate a composite decorative article comprising an outer layer of vinyl film, an intermediate layer comprising a polyurethane resin or a vinyl resin, and an underlying layer of a plasticizer tolerant pressure-sensitive adhesive comprising the reaction product of reactants comprising (a) acrylic acid and/or methacrylic acid and/or acrylamide, and/or methacrylamide (b) an alkylacrylate and/or alkylmethacrylate, having at least 4 carbon atoms and wherein the carbon atom attached to the oxy atom of the carbonyloxy group has at least one hydrogen atom attached thereto, and (c) at least one additional ethylenically unsaturated monomer, said bonding being between said substrate and said adhesive.

4,605,593

PRESSURE SENSITIVE TRANSFERRING MEMBER

Fumio Iida, Nagareyama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1985, Ser. No. 770,304

Claims priority, application Japan, Sep. 4, 1984, 59-183669; Dec. 15, 1984, 59-264758

Int. Cl.[4] C09J *7/02*

U.S. Cl. 428—352 **6 Claims**

1. A pressure sensitive transfer member which comprises a flexible plastic film substrate and a pressure sensitive transferring image forming layer comprising a binder resin, a plasticizer for the binder resin and a coloring agent and overlying the flexible plastic film substrate, the plasticizer being oleyl oleate.

4,605,594

CERAMIC ARTICLES HAVING A NONPOROUS CORE AND POROUS OUTER LAYER

Kenneth E. Owens, Lake Elmo, and Robert A. Hatch, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 8, 1984, Ser. No. 638,859

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—373 **51 Claims**

1. A fired, non-vitreous, non-fused, monolithic, ceramic article characterized by having a core and a sheath or outer layer, at least a portion of said core being enveloped or covered by said sheath or outer layer, said sheath or outer layer having a structure characterized by interconnected micropores, said micropores having an average diameter of less than 300 Å, said core having a substantially non-porous structure.

4,605,595

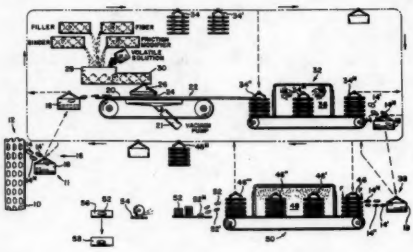
METHOD OF MANUFACTURING A FRICTION ARTICLE

Peter H. Tsang, Union Lake; Joseph P. Coyle, Warren, both of Mich.; Tung Liu, Granger, Ind., and John G. VanderPoorte, St. Clair Shores, Mich., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 553,288, Nov. 18, 1983, Pat. No. 4,537,823. This application Mar. 18, 1985, Ser. No. 713,353

Int. Cl.[4] B32B *3/26, 27/38;* **F16D** *69/00*

U.S. Cl. 428—413 **6 Claims**



1. A friction article for use in a brake comprising:

an open foam material selected from a group consisting of carbon, iron, silicon carbide, nickel, and aluminum, said open foam material having a first continuous and substantially uniform three dimensional matrix; and a slurry made up of fillers, friction modifiers, and a resin binder, said slurry being drawn into said first three dimensional matrix, said resin binder being cured to establish a second three dimensional matrix which holds said fillers and friction modifiers within said first three dimensional matrix, said first and second three dimensional matrices being distinct and functionally indepenedent to withstand stresses experienced during a brake application.

2. The friction article as rectied in claim **1** wherein said three dimensional matrix conducts heat away from an operational surface of said friction article.

3. The friction article as recited in claim **2** wherein said binder is an epoxy resin.

4,605,596

ADDITIVE FOR COATING COMPOSITIONS

Grant C. Fry, Lake Orion, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 451,249, Dec. 20, 1982, Pat. No. 4,451,600. This application Dec. 19, 1983, Ser. No. 562,512

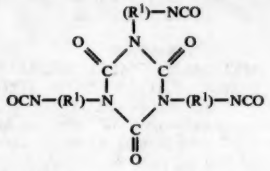
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.[4] C08K *5/11, 5/34;* **C08F** *8/30*

U.S. Cl. 428—423.3 **10 Claims**

1. An additive for coating compositions which comprises about

(A) 20–50% by weight of a polyisocyanate of the formula



where R' is $(CH_2)_6$;

(B) 1–15% by weight of an ester of [polyethylene glycol diethylhexoate]polyethylene glycol di(2-ethylhexoate);

(C) 1–10% by weight of a blend of ultraviolet light stabilizers consisting essentially of 2-[2'-hydroxy-3',5'-1(1-1-dimethylpropyl)phenyl]benzotriazole and di-[4-(2,2,6,6-tetramethyl-piperidyl)]sebacate and

(D) 25–78% by weight of organic solvent comprising ethyl acetate, toluene and diethylene glycol monobutyl ether.

4,605,597

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co.,Ltd., Kanagawa, Japan

Filed Aug. 20, 1984, Ser. No. 642,283

Claims priority, application Japan, Aug. 18, 1983, 58-150512

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—522 **13 Claims**

1. A magnetic recording medium comprising a support having coated thereon a magnetic layer containing a ferromagnetic powder dispersed in a binder and a copolymer of vinyl chloride and vinyl acetate having at least one terminal carboxyl group and a degree of magnetic of from about 20 to 80 and wherein the amount of said copolymer is about 0.1 to 10 wt % based on the amount of the ferromagnetic powder.

4,605,598

STEEL WIRE HAVING SUPERPOSED COATINGS RESISTING CORROSION

Bruno Thomas, Loos-en-Gohelle, and Guy Viart, Capelle Fermont, both of France, assignors to Fils et Cables D'Acier de Lens (Fical), Loison-Sous-Lens, France

Filed Jun. 26, 1984, Ser. No. 624,961

Claims priority, application France, Jun. 28, 1983, 83 10660

Int. Cl.[4] B32B *15/00*

U.S. Cl. 428—659 **1 Claim**

1. A highly ductile hard steel wire having corrosion resistant superposed coatings, said wire being coated with a first inner Al-Fe-Zn alloy layer consisting essentially of between 15% and 45% Al, between 5% and 25% Fe and the balance being essentially Zn with minor amounts of one or more elements selected from the group consisting of Mg, Sn, Ni, Cu, Cr and mischmetal in an amount which does not exceed a total amount of 0.5% and a second outer alloy layer consisting essentially of between 3% and 20% Al, between 0.5% and 5% Fe and the remainder being essentially Zn with minor amounts, not to exceed a total amount of 0.5%, of one or more elements selected from the groups consisting of Mg, Sn, Ni, Cu, Cr, and Mischmetal.

4,605,599

HIGH DENSITY TUNGSTEN ALLOY SHEET

Thomas W. Penrice, Juliet, and James Bost, Mt. Juliet, both of Tenn., assignors to Teledyne Industries, Incorporated, Los Angeles, Calif.

Filed Dec. 6, 1985, Ser. No. 805,701

Int. Cl.[4] B32B *15/00*

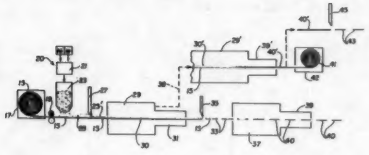
U.S. Cl. 428—665 **17 Claims**

1. A process for the manufacture of high density tungsten (W) alloy sheet comprising the steps of:

selecting at least first and second alloy constituents, wherein each of said constituents have a melting point below that of tungsten and wherein the first constituent has a higher melting point than said second constituent;

forming a substrate in sheet or foil form containing as a major portion said first alloy constituent;

loading said substrate with a metal powder mixture containing predetermined amounts of tungsten powder admixed with powder particles of at least said second alloy constituent;



heating said powder mixture and said substrate to form a partially consolidated tungsten alloy skeleton partially bonded to the substrate;

further heating said partially consolidated tungsten alloy skeleton and said substrate to a temperature above the melting point of said substrate, whereby said substrate melts and infiltrates the tungsten alloy skeleton to complete the densification thereof.

4,605,600

TRANSPARENT GAAS PHOTOELECTRIC LAYER

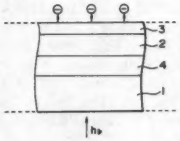
Minoru Niigaki; Tokuaki Nihashi, and Masashi Ohta, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 30, 1985, Ser. No. 729,160

Claims priority, application Japan, May 8, 1984, 59-91500

Int. Cl.[4] B32B *9/00*

U.S. Cl. 428—689 **3 Claims**



1. A transparent GaAs photoelectric layer formed on an optical window made of a GaP single crystal substrate via an $Al_xGa_{(1-x)}As$ buffer layer, characterized in that:

a gradual-lattice-constant layer of quadruple $Al_xGa_{(1-x)}PyAs_{(1-y)}$ compound crystal is formed between said GaP single crystal substrate and said $Al_xGa_{(1-x)}As$ buffer layer.

4,605,601

METHOD OF OPERATION OF A FUEL CELL

Marinus Alfenaar, Schinnen, Netherlands, assignor to Electrochemische Energieconversie N.V., Mol, Belgium

Filed Jan. 11, 1985, Ser. No. 690,622

Claims priority, application Netherlands, Jan. 14, 1984, 8400128

Int. Cl.[4] H01M *8/24*

U.S. Cl. 429—13 **6 Claims**

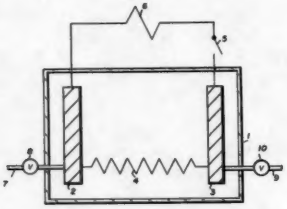
1. A method of operating a fuel cell, said fuel cell having an anode and a cathode and at least one anode chamber and at least one cathode chamber, said anode being electrically connected with said cathode within said fuel cell through at least

one electrical conductor, said fuel cell providing power to an external current driven source, wherein said method comprises:

supplying fuel and oxidant to said fuel cell;

providing a stoichiometric excess amount of fuel at said anode relative to the amount of oxidant in a cathode chamber;

subsequently at least virtually stopping the supply of oxidant to said fuel cell and stopping the drain of current by said external current drain source such that said anode chamber is left filled with fuel; and



maintaining at least one electrically conductive connection between said anode and said cathode after the external current drain from said fuel cell has been stopped,

maintaining, during said process after said current drain from said fuel cell to said external current driven source has been stopped and the supply of said oxidant is also stopped, at least one said electrical connection between said anode and said cathode within said fuel cell such that the arithmetic product of the total electrical resistance between said anode and said cathode electrically conductively connected together within said fuel cell, in Ω and the active surface area of said cathode in m^2, ranges between 10^{-4} Ωm² al 10 Ωm².

4,605,602

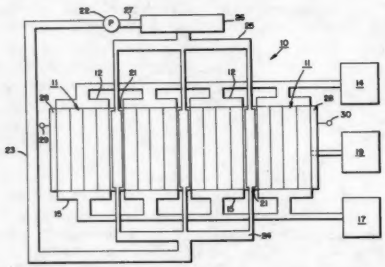
CORROSION PROTECTED, MULTI-LAYER FUEL CELL INTERFACE

Haim Feigenbaum, Ramat Ilan, Israel; Sheldon Pudick, Sayreville, and Chiu L. Wang, Edison, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Aug. 27, 1984, Ser. No. 644,822

Int. Cl.⁴ H01M *8/24, 8/02*

U.S. Cl. 429—26 **12 Claims**



1. A fuel cell stack comprising a plurality of stacked elements, including at least one corrosion resistant, electrically conductive, fluid impervious interface arranged between two of said elements which are not adjacent to one another, said interface comprising a non-cupreous metal coating formed on at least one of said elements and a conductive layer bonded to at least said metal-coated element by a hot-pressed resin, said resin substantially filling any pores in said conductive layer.

4,605,603

HERMETICALLY SEALED METALLIC OXIDE-HYDROGEN BATTERY USING HYDROGEN STORAGE ALLOY

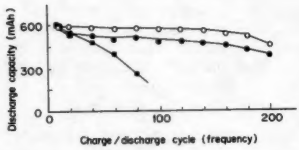
Motoya Kanda, and Yuji Sato, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1984, Ser. No. 684,587

Claims priority, application Japan, Dec. 26, 1983, 58-243708; Jun. 14, 1984, 59-120826; Jun. 30, 1984, 59-135908

Int. Cl.⁴ H01M *10/34, 4/36*

U.S. Cl. 429—59 **9 Claims**



1. A hermetically sealed metallic oxide-hydrogen battery comprising a metallic oxide as a positive electrode active material and hydrogen as a negative electrode active material, wherein said negative electrode is comprised of a hydrogen storage alloy which contains both Mn and Al, said alloy being represented by the formula:

$$MNi_{5-(x+y)}Mn_xAl_y$$

wherein M is a mischmetal, a lanthanum element or a lanthanum-rich mischmetal; and x and y are values satisfying relations of $0<x<1$, $0<y<1$ and $0.2 \leqq x+y \leqq 1$, respectively.

4,605,604

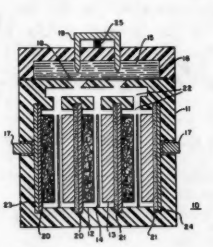
NICKEL-ALUMINUM DRY CHARGE RESERVE BATTERY

William Pollack, Scott Township, Allegheny County, and Edward S. Buzzelli, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1985, Ser. No. 745,979

Int. Cl.⁴ H01M *6/36*

U.S. Cl. 429—116 **8 Claims**



1. A nickel-aluminum reserve battery comprising:

(1) a case within which are disposed at least one bipolar plate comprising:

(i) an electrode comprising battery material, the battery material consisting essentially of nickel hydroxide, said material containing —OH groups, and

(ii) an electrode comprising aluminum,

(2) a storage reservoir containing aqueous alkali hydroxide electrolyte near the case, and

(3) means to transfer stored electrolyte to the electrodes

where the nickel hydroxide containing electrode is connected to a current collector, which current collector is in turn connected to the aluminum electrode of the bipolar plate by means of an electrically conducting bonding medium.

7. A bipolar battery plate comprising:

(1) an electrode comprising battery material, the battery material consisting essentially of nickel hydroxide, said material containing —OH groups, and

(2) an electrode comprising aluminum, where the nickel hydroxide containing electrode contains battery material disposed within a fiber metal plaque selected from the group consisting of nickel fibers and nickel plated steel wool fibers, where said metal plaque is connected to a current collector selected from the group consisting of sheet nickel and nickel plated sheet, where said current collector is connected to the aluminum electrode by means of an electrically conducting bonding medium.

4,605,605

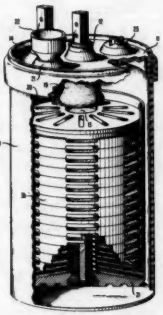
LEAD-ACID BATTERY HAVING POSITIVE POSTS OF LEAD-TIN ALLOY

Anthony G. Cannone, Cranford, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 540,160, Oct. 7, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 778,755

Int. Cl.⁴ H01M *2/08*

U.S. Cl. 429—174 **6 Claims**



1. A lead-acid battery comprising in combination

a. a battery receptacle containing positive electrode, negative electrode and electrolyte;

b. a cover for said receptacle in which there is at least one opening in said cover;

c. a positive electrode post mounted within said receptacle and extending through said opening; and

d. sealing means comprising epoxy seal for preventing leakage of electrolyte between said positive electrode post and said cover characterized in that the surface of the positive post to which the epoxy seal is made consists of lead-tin binary alloy, said alloy consisting of from 0.1 to 1.5 weight percent tin remainder lead.

4,605,606

GAUSSIAN LASER BEAM FILTER

Ronald A. Ferrante, Senecaville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 519,441, Aug. 1, 1983, abandoned. This application Feb. 28, 1985, Ser. No. 707,163

Int. Cl.⁴ G03H *1/10, 1/18*

U.S. Cl. 430—2 **3 Claims**

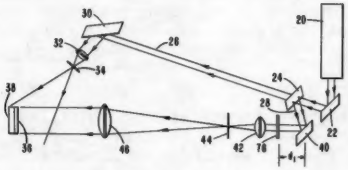
1. A method for the construction of a hologram for use in a scanning system comprising the steps of;

providing a source of coherent light having an intensity which varies from point to point over its cross-sectional area in accordance with a predetermined Gaussian function;

splitting the light beam into first and second unexpanded light beams;

focusing the first unexpanded light beam onto an object through a first spatial filter for expanding the light beam as it strikes the object;

positioning a photographic film in the second unexpanded light beam at a predetermined distance from the source of coherent light;



developing the exposed photographing film for a predetermined time period;

reinserting the developed film in the second unexpanded light beam at said predeveloped distance from the source to cause said unexpanded coherent light beam to have a uniform intensity when emerging from the film;

focusing the uniform intensity second light beam through a second spatial filter onto a collimating lens which emits a collimated light beam;

and directing the collimated light beam onto a recording medium located adjacent the object.

4,605,607

OPTICAL DATA STORAGE MEDIUM HAVING ORGANOMETALLIC CHROMOPHORE/POLYMER COORDINATED INFORMATION LAYER

David E. Nikles, Colonia; R. Sidney Jones, Jr., Randolph, and James E. Kuder, Fanwood, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 8, 1985, Ser. No. 720,633

Int. Cl.⁴ G03C *1/72;* **G03F** *7/26*

U.S. Cl. 430—17 **33 Claims**

15. A readable information medium comprising a relatively thick and thermally stable substrate and having coated thereon a layer comprising an information track comprised of a succession of spaced pits, said layer being comprised of a polymer and an organo macrocyclic chromophore containing a constituent metal atom, with the chromophore being chemically coordinated to the polymer through its constituent metal atom.

4,605,608

IMAGE-RECEIVING ELEMENT WITH CROSSLINKED HYDROPHILIC POLYMER CONTAINING PROCESSING COMPOSITION

Julian G. Bullitt, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1985, Ser. No. 779,281

Int. Cl.⁴ G03C *5/54, 5/30, 1/48*

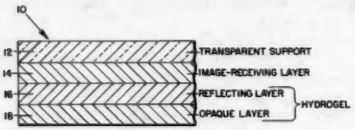
U.S. Cl. 430—206 **14 Claims**

10. A method for forming a diffusion transfer image which comprises the steps of

(a) exposing a photosensitive element comprising a first support carrying at least a first photosensitive silver halide emulsion layer;

(b) superposing an image-receiving element to the outermost layer of said photosensitive element; said image-receiving element comprising a second support carrying an image-receiving layer and a hydrogel, said hydrogel comprising

a hydrophilic polymer cross-linked with ionizing radiation and an aqueous alkaline photographic processing composition; whereby a sufficient quantity of said processing



composition is absorbed by said photosensitive element to develop said photosensitive silver halide layer, and transferring an imagewise distribution of image-forming material to said image-receiving layer.

4,605,609

IMAGE RECEIVING MATERIAL WITH LOW CALCIUM GELATIN

Koji Okazaki; Yasuo Tsubai, and Kimihisa Hamazoe, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Chiyoda, Japan

Filed Aug. 21, 1984, Ser. No. 643,027

Claims priority, application Japan, Sep. 9, 1983, 58-166185; Dec. 26, 1983, 58-247118

Int. Cl.[4] G03C *5/54*

U.S. Cl. 430—232 **14 Claims**

1. A non-photosensitive image receptive material which comprises at least a support and an image receptive layer containing a gelatin having a calcium content of about 1,000 ppm or less and contains physical development nuclei and a jelly strength of 280 g or above as determined by the method of PAGI.

4,605,610

EMULSION RICH IN SILVER CHLORIDE, PHOTOGRAPHIC RECORDING MATERIAL AND PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC RECORDINGS

Sieghart Klötzer, Cologne, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,722

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409445

Int. Cl.[4] G03C *7/26, 1/02*

U.S. Cl. 430—376 **8 Claims**

1. A photographic silver halide emulsion which substantially contains chloride as halide and the grains of which have a layered grain structure, wherein

at least 60 mol-% of the silver halide of the emulsion is silver chloride,

at least one region B contains at least 25 mol-% AgBr, but less than 50 mol-% AgBr,

the grains have a core encased by at least one region B.

4,605,611

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeru Ohno, and Shinzo Kishimoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

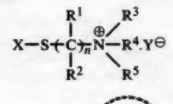
Filed Aug. 20, 1985, Ser. No. 767,536

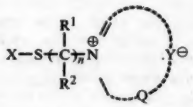
Claims priority, application Japan, Aug. 20, 1984, 59-172957

Int. Cl.[4] G03C *7/40, 7/42*

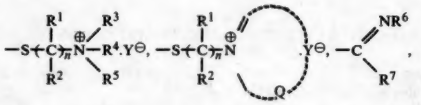
U.S. Cl. 430—393 **18 Claims**

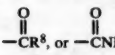
1. A method for processing a silver halide color photographic material by subjecting a light-exposed silver halide color photographic material to a color development and then subjecting it to bleach processing and fix processing or to blix processing, which comprises performing said bleach processing or blix processing using a bleach bath or a blix bath containing a ferric ion complex salt as a bleaching agent, said bleach bath or blix bath, or a prebath for said bath containing at least one compound represented by the following general formula (I) or (II);


(I)


(II)

wherein, X represents a hydrogen atom,





$Y^{\ominus}$ represents an anion; Q represents an atomic group necessary for forming a quaternary nitrogen-containing unsaturated heterocyclic ring; n represents an integer of 1 to 5; R^1, R^2, R^6 and R^8 each represents a hydrogen atom or a lower alkyl group; R^3, R^4 and R^5 each represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; at least two of said R^3, R^4 and R^5 may combine with each other to form a ring; said R^3, R^4 or R^5 and said R^1 or R^2 may combine with each other to form a ring; and R^7 represents $-NR^9R^{10}$, $-OR^{11}$ or $-SR^{11}$ (wherein R^9 and R^{10} each represents a hydrogen atom or a lower alkyl group; R^{11} represents an atomic group necessary for forming a ring by combining with R^6; and said R^9 or R^{10} and R^6 may combine with each other to form a ring).

4,605,612

SUPPORT FOR PHOTOGRAPHIC PAPER HAVING ELECTRON BEAM CURED RESIN LAYER

Yasuzi Asao, and Takashi Takayanagi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

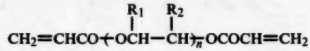
Filed Feb. 27, 1985, Ser. No. 706,354

Claims priority, application Japan, Feb. 27, 1984, 59-35736

Int. Cl.[4] G03C *1/76*

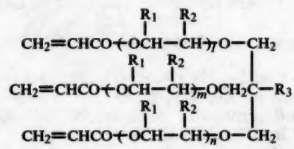
U.S. Cl. 430—538 **5 Claims**

1. A support for photographic paper which comprises a sheet of paper coated with a composition consisting essentially of an unsaturated bond-containing electron beam-polymerizable organic compound (A) and an inorganic white pigment (B), wherein the composition is subjected to electron beam irradiation for curing, wherein said unsaturated bond-containing organic compound (A) and said inorganic white pigment (B) are present in a weight ratio (A)/(B) of from 3/1 to 1/9, and said unsaturated bond-containing organic compound (A) comprises an unsaturated organic compound (C) containing two carbon-to-carbon double bonds per molecule and an unsaturated organic compound (D) containing three carbon-to-carbon double bonds per molecule, and the weight ratio (C)/(D) is from 49/51 to 1/99, wherein the unsaturated organic compound (C) is an ether-type acrylate represented by the formula



(I)

wherein R_1 and R_2 each represents —H, —OH, an alkyl group containing from 1 6 carbon atoms, an alkoxy group containing from 1 to 6 carbon atoms, or an aryl group, and is 1 to 15, and wherein the unsaturated organic compound (D) is an ether-type triacrylate represented by the formula



(II)

wherein R_1, R_2 and R_3 each represents —H, —OH, —CH_2OH, an alkyl group containing from 1 to 6 carbon atoms, an alkoxy group containing from 1 to 6 carbon atoms, or an aryl group, and l+m+n is from 1 to 20.

4,605,613

BALLASTED DYE COMPOUNDS WITH LINKAGES CONTAINING THREE AROMATIC NUCLEI FOR USE IN A DYE DIFFUSION TRANSFER PROCESS AND ELEMENT

Christian C. Van de Sande, Belsele; Armand M. Van den Bergh, Berchem; Wilhelmus Janssens, Aarschot, all of Belgium, and Hans Vetter, Cologne, Fed. Rep. of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

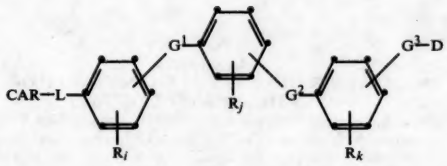
Filed Jul. 26, 1985, Ser. No. 759,345

Claims priority, application European Pat. Off., Aug. 11, 1984, 84201164.5

Int. Cl.[4] G03C *1/40, 5/54*

U.S. Cl. 430—562 **6 Claims**

1. A photographic silver halide emulsion material containing a ballasted non-diffusing compound capable of releasing a diffusible mono-azo dye or dye precursor thereof from a carrier moiety, characterized in that said compound corresponds to the following general formula:



wherein:

CAR represents a ballasted carrier moiety making said compound non-diffusing in a hydrophilic colloid medium after wet alkaline conditions,

L represents a chemical group cleavable or releasable from the carrier moiety as a function of a redox-reaction or argentolytic reaction taking place in the development of a silver halide emulsion layer under alkaline conditions,

G^1 and G^3 (same or different) is a —SO_2NR^3— or —NR^3SO_2— group wherein R^3 is hydrogen, an alkyl group or an aryl group,

G^2 is a chemical bond or a bivalent linking atom or group selected from the group consisting of —O—, —S—, —SO_2—, —CH_2—, —CH_2CH_2—, —NH^3—, —OCH_2CH_2O—, —OCH_2CH_2—, —$CONR^3$—, —SO_2NR^3—, —NR^3CO— or —NR^3SO_2—, wherein R^3 is hydrogen, an alkyl group or an aryl group,

R_i, R_j and R_k (same or different) is hydrogen or one or more substituents selected from the group consisting of halogen, an alkyl group, alkoxy, alkylthio, a R^4CONH— group or a R^4SO_2NH— group, wherein R^4 is an alkyl group or an aryl group, and

D is an azo dye part.

4,605,614

METHOD FOR MEASURING PLASMIN

Takeshi Nagasawa; Katsumasa Kuroiwa; Katsuyuki Takabayashi, and Yoshio Nakamura, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

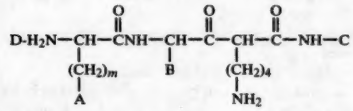
Division of Ser. No. 417,377, Sep. 13, 1982, Pat. No. 4,452,736. This application Feb. 13, 1984, Ser. No. 579,868

Claims priority, application Japan, Oct. 14, 1981, 56-163649

Int. Cl.[4] C12Q *1/56, 1/38*

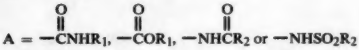
U.S. Cl. 435—13 **2 Claims**

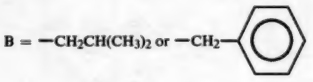
1. A method for measuring the activity of plasmin in plasma which comprises reacting a compound of the following formula or a salt thereof:

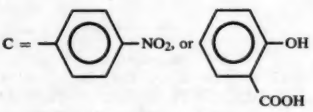


wherein

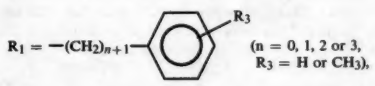
m = 1, 2, 3 or 4

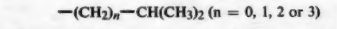


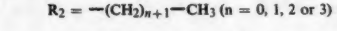


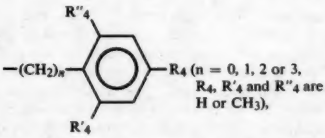


wherein









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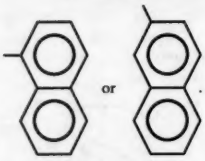


with plasmin in a buffer solution having a pH of 7.2 to 7.6 and quantitatively determining the reaction product thereof.

4,605,615

L-GLUTAMIC ACID OXIDASE (H_2O_2-GENERATING), ITS PRODUCTION AND ANALYTICAL METHOD THEREFOR

Hidehiko Ishikawa; Hideo Misaki, and Naoki Muto, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 2, 1983, Ser. No. 472,174

Claims priority, application Japan, Mar. 2, 1982, 57-33497

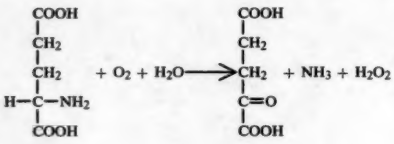
Int. Cl.[4] C12Q *1/52, 1/36, 1/26;* **C12N** *9/06;* **C12R** *1/465*

U.S. Cl. 435—16 **14 Claims**

1. L-glutamic acid oxidase having the following biochemical properties:

(a) substrate specificity: L-glutamic acid,

(b) enzyme action: catalyzes a reaction which forms one mole of α-ketoglutaric acid, one mole of ammonia and one mole of hydrogen peroxide from one mole of L-glutamic acid, one mole of oxygen and one mole of water, as follows:



[I]

4,605,616

DETERMINATION OF OXIDIZED α-1-PROTEINASE INHIBITOR IN SERUM OR PLASMA

James Travis, Athens, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 402,442, Jul. 27, 1982, Pat. No. 4,493,891. This application Sep. 27, 1984, Ser. No. 654,966

The portion of the term of this patent subsequent to Jan. 15, 2001, has been disclaimed.

Int. Cl.[4] C12Q *1/38;* **C12N** *9/99*

U.S. Cl. 435—23 **2 Claims**

1. A method for determining the presence of oxidized α-1-proteinase inhibitor in an unknown sample of serum or plasma, which comprises:

(a) determining the reduction in activity of an enzyme inhibitable by α-1-proteinase inhibitor in the presence of a first portion of said sample;

(b) determining the reduction in activity of an elastase enzyme in the presence of a second portion of said sample; and

(c) comparing the relative amount of reduction of activity in steps (a) and (b) to the relative amount of reduction in activity of said enzyme inhibitable by α-1-proteinase inhibitor and said elastase enzyme in the presence of a reduced standard sample of α-1-proteinase inhibitor, wherein the same relative reduction in activity indicates reduced α-1-proteinase inhibitor and a lesser relative reduction in activity of elastase enzyme compared to activity of said enzyme inhibitable by α-1-proteinase inhibitor indicates the presence of oxidized α-1-proteinase inhibitor.

4,605,617

PROCESS FOR CULTURING ANAEROBIC BACTERIA AND AGENTS FOR PREPARING CULTURE ATMOSPHERE

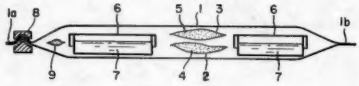
Makoto Kasugai, Tokyo, Japan, assignor to Mate, Inc., Tokyo, Japan

Continuation of Ser. No. 424,328, Sep. 27, 1982, abandoned. This application Jan. 14, 1985, Ser. No. 691,370

Claims priority, application Japan, Sep. 30, 1981, 56-153830

Int. Cl.[4] C12Q *1/02;* **C12N** *1/20;* **C12M** *1/34*

U.S. Cl. 435—29 **6 Claims**



1. A process for detecting a plurality of types of anaerobic bacteria by culturing test samples in a closed culture vessel, comprising;

introducing into the culture vessel an inoculated culture meduim and an agent comprising a composition which removes oxygen and generates carbon dioxide such that the volume of removed oxygen is approximately twice as great as the volume of carbon dioxide generated;

closing the vessel; and

maintaining the interior atmosphere in the culture vessel in a state where the oxygen concentration does not exceed 0.1% by volume and the carbon dioxide concentration is between 10% and 12% by volume for the period of at least 3 to 24 hours after closing the vessel.

4,605,618

METHOD FOR MEASURING ANTI-INFLAMMATORY PROPERTIES OF A COMPOSITION

Philip B. Dunham, Syracuse, and Gerald Weissmann, New York, both of N.Y., assignors to New York University, New York; Syracuse University, Syracuse, both of, N.Y. and Marine Biological Laboratory, Woods Hole, Mass.

Filed Jul. 11, 1983, Ser. No. 512,629

Int. Cl.[4] C12Q *1/02;* **G01N** *21/59, 33/48*

U.S. Cl. 435—29 **6 Claims**

1. A method for measuring the anti-inflammatory properties of a composition by measuring the effect of the composition on marine sponge cell aggregation comprising:

(i) adding a predetermined amount of a composition to an aqueous suspension of dissociated marine sponge cells;

(ii) measuring the optical density of said suspension after a first predetermined time interval;

(iii) measuring the optical density of said suspension at a second predetermined time after said first time;

(iv) measuring the effect of the composition on marine sponge cell aggregation by comparing the optical density at said first time with the optical density at said later time as a measure of the anti-inflammatory properties of the composition.

4,605,619

PROCESS FOR PREPARING FRUCTOSE FROM STARCH

Robert O. Horwath, Westport, and Robert M. Irbe, Norwalk, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 393,589, Jun. 30, 1982, Pat. No. 4,458,017. This application Mar. 22, 1984, Ser. No. 592,123
The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.
Int. Cl.[4] C12P *19/24;* C12N *9/30, 9/34, 9/92;* C12R *1/645*
U.S. Cl. 435—94 7 Claims

1. The process for preparing fructose which comprises liquefying starch by contacting starch with alpha-amylase contacting the resulting liquefied starch with glucoamylase to hydrolyze said starch to glucose, and isomerising at least part of the resulting glucose to fructose by contacting said glucose with glucose isomerase, wherein all three enzymes are obtained from the same organism of the Basidiomycetes class of fungi.

4,605,620

PROCESS FOR FERMENTING CARBOHYDRATE- AND PHOSPHATE-CONTAINING LIQUID MEDIA

Wolfram Andersch, Hildesheim; Hubert Bahl, Essen-Oldenburg, and Gerhard Gottschalk, Nörten-Hardenberg, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH (GBF), Braunschweig-Stockheim, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,093
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3146084
Int. Cl.[4] C12N *1/20;* C12P *7/28, 7/26;* C12Q *3/00*
U.S. Cl. 435—148 8 Claims

1. In a process for producing butanol, acetone and/or ethanol by fermenting carbohydrate and phosphate containing liquid culture medium with bacteria capable of producing butanol, acetone and/or ethanol as fermentation products with a growth step followed by a fermentation step, the improvement comprising maintaining the total soluble phosphate concentration present in the medium between 0.4 and 0.75 mmolar during the fermentation.

4,605,621

CLAY-ENZYME COMPLEXES AND METHOD FOR PREPARING SAME

Thomas J. Pinnavaia; Max M. Mortland, and Stephen A. Boyd, all of East Lansing, Mich., assignors to Michigan State University, East Lansing, Mich.

Filed Nov. 29, 1984, Ser. No. 676,171
Int. Cl.[4] C12N *11/02*
U.S. Cl. 435—177 14 Claims

1. A method for preparing immobilized enzymes which comprises reacting an enzyme to be immobilized with an organoclay comprising a clay selected from the group consisting of smectite type clays, hectorite and vermiculite, at least some cations of which have been replaced by onium ions and/or organometallic cations to render the clay hydrophobic.

4,605,622

PROCESS FOR PRODUCING GRANULAR FIXED ENZYMES OR MICROORGANISMS

Eiichi Hasegawa; Takamitsu Iida, and Masahiro Sakamoto, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Nov. 15, 1983, Ser. No. 551,928
Int. Cl.[4] C12N *11/04, 11/02, 11/10, 11/12*
U.S. Cl. 435—182 12 Claims

1. A liquid composition comprising (a) 100 parts by weight of a hydrophilic photocurable resin having a number average molecular weight in the range of from 300 to 100,000, at least two ethylenically unsaturated bonds per molecule, and a hydrophilic group selected from a hydroxyl group, a carboxyl group, a phosphoric acid group, a sulfonic acid group, an amino group and an ether linkage, (b) 0.01 to 10 parts by weight of a photopolymerization initiator, (c) 0.5 to 15 parts by weight of a water-soluble polysaccharide having a molecular weight in the range of from 3,000 to 2,000,000, a water solubility at 25° C. of at least 10 g/liter, and an ability to gel upon contact with at least one polyvalent metal ion, and (d) 0.001 to 50 parts by weight of an enzyme or microorganism strain.

4,605,623

METHOD OF ALTERING GROWTH AND DEVELOPMENT AND SUPPRESSING CONTAMINATION MICROORGANISMS IN CELL OR TISSUE CULTURE

William G. Malette, 667 Parkwood La., Omaha, Nebr. 68132, and Herbert J. Quigley, Jr., 9511 Mockingbird Dr., Omaha, Nebr. 68127

Continuation-in-part of Ser. No. 440,039, Nov. 8, 1982, Pat. No. 4,532,134. This application Aug. 15, 1983, Ser. No. 522,974
Int. Cl.[4] C12N *5/00, 5/02;* C12R *1/91;* A61K *30/12*
U.S. Cl. 435—240 12 Claims

1. A method for cultivating myocytes in suspension comprising growing myocytes in a culture media containing an amount of an aqueous chitosan solution sufficient to enable the three-dimensional growth of said myocytes and to inhibit certain undesired cells in the culture media including fibroblasts, tumor cells, mycoplasma and bacteria, wherein the source of chitosan is a chitosan derivative selected from polyglucosamine or chitosan salts which are essentially water soluble at ambient temperature.

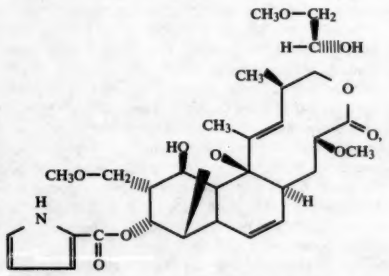
4,605,624

NOCARDIA SPECIES CAPABLE OF PRODUCING NARGENICIN C_1

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 435,793, Oct. 21, 1982, Pat. No. 4,436,747. This application Jan. 13, 1984, Ser. No. 570,334
Int. Cl.[4] C12N *1/20;* C12R *1/365*
U.S. Cl. 435—253 2 Claims

1. A biologically pure culture of the microorganism Nocardia sp. ATCC 39177, said culture being capable of producing nargenicin C_1, the compound of the formula



in recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen.

4,605,625
PROCESS FOR PRODUCING S-ADENOSYL-L-HOMOCYSTEINE

Hideaki Yamada; Sakayu Shimizu, both of Kyoto, and Shozo Shiozaki, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

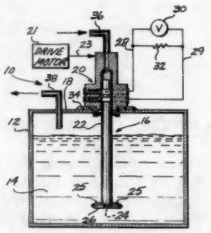
Filed Feb. 27, 1985, Ser. No. 706,393
Claims priority, application Japan, Feb. 27, 1984, 59-35566
Int. Cl.[4] C07P *41/00*; C12P *19/26, 19/28, 19/40*
U.S. Cl. 435—280 **15 Claims**

1. A process for producing S-adenosyl-L-homocysteine which comprises contacting adenosine with D-homocysteine in an aqueous medium in the presence of cells or treated cells of a microorganism of the genus Pseudomonas having the ability to racemize D-homocysteine to DL-homocysteine and in the present of S-adenosyl-L-homocysteine hydrolase, thereby synthesizing S-adenosyl-L-homocysteine and thereafter collecting it.

4,605,626
ELECTROCHEMICAL SYSTEM WITH ROTATING ELECTRODE/SPARGER ASSEMBLY

Theodore R. Beck, Seattle, Wash., assignor to Rohrback Technology Corporation, Seattle, Wash.

Filed May 1, 1985, Ser. No. 729,209
Int. Cl.[4] C12M *1/34*
U.S. Cl. 435—291 **25 Claims**



1. An electrode assembly for use in an electrochemical system for determining the concentration of an enzymatic agent in a liquid sample, the electrochemical system including mounting means for mounting the electrode assembly such that at least the lower end of the electrode assembly is immersed in the sample and drive means for rotating the electrode assembly, the electrode assembly comprising:

a shaft having a longitudinal axis and a longitudinally extending interior passage;

an electrode mounted in a fixed position with respect to the shaft such that when the shaft is mounted by the mounting means, the electrode is immersed in the sample;

sparging means mounted to the shaft such that the sparging means is immersed in the sample when the shaft is mounted by the mounting means, the sparging means being in communication with the passage; and

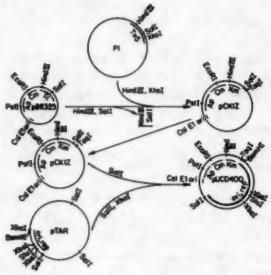
first conductor means for electrically connecting the electrode to the electrochemical system;

whereby rotation of the electrode assembly by the drive means and introduction of an inert gas into the passage results in the rapid removal of dissolved oxygen from the sample.

4,605,627
PLASMID VEHICLE FOR CLONING IN *AGROBACTERIUM TUMEFACIENS*

Clarence Kado; Robert C. Tait, and Ronald C. Lundquist, all of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 7, 1983, Ser. No. 501,959
Int. Cl.[4] C12N *1/00, 15/00*; C07H *15/12*
U.S. Cl. 435—317 **8 Claims**



1. A DNA fragment of less than 10 kbp which includes a sequence that corresponds identically with that which possesses the minimum compatible with continued replication and which is derived from the origin of replication and associated replication functions which are located on a 7.5 kbp XhoI/SalI restriction fragment of the pTAR plasmid.

4,605,628
ELECTROCHEMICAL DETERMINATION OF HEMATOCRIT

Scot D. Abbott, Wilmington, Del.; Herman W. Levin, Philadelphia, Pa.; Robert K. Kobos, Wilmington, Del.; Henn Kilkson, Wilmington, Del., and Dale R. Peterson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed Oct. 4, 1984, Ser. No. 657,944
Int. Cl.[4] G01N *33/86*
U.S. Cl. 436—70 **4 Claims**

1. A method for measuring the hematocrit of blood, Hct, comprising:

(1) measuring the concentration of a preselected electrochemically detectable marker, $[Marker]_{BD}$, in a preselected volume of whole blood, V_{WB}, having an initial ratio of red ceil volume to plasma volume, the concentration of the marker within red cells being different from its concentration in plasma;

(2) decreasing the ratio of red cell volume to plasma volume by diluting the preselected volume of whole blood by adding a volume of diluent, V_{add}, not containing the marker;

(3) measuring the marker concentration after dilution, $[Marker]_{AD}$; and

(4) calculating the hematocrit using the equation:

$$Hct = \frac{1 + \frac{V_{add}}{V_{WB}} - \frac{[Marker]_{BD}}{[Marker]_{AD}}}{1 - \frac{[Marker]_{BD}}{[Marker]_{AD}}}$$

where:

Hct is hematocrit;

V_{add} is added diluent volume;

V_{WB} is volume of blood sample;

$[Marker]_{BD}$ is the measured marker concentration before dilution;

[Marker]$_{AD}$ is the measured marker concentration after dilution.

4,605,629

METHOD OF ELUTING REAGENT FROM REAGENT STRIPS FOR CHEMICAL ANALYSES AND REAGENT STRIP THEREFOR

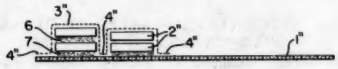
Hans Lange, Lampertheim; Edda Geisler, and Wolfgang Werner, both of Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 328,313, Dec. 7, 1981, abandoned. This application Jul. 27, 1984, Ser. No. 634,667

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048799

Int. Cl.^{4} G01N *21/78, 33/52*

U.S. Cl. 436—166 **14 Claims**



1. A method of reagent elution from a reagent strip having an elongated handle and a dry, absorbent carrier impregnated with a reagent on one end of the handle, the method comprising: providing a thin mesh stuck onto the handle at opposite sides of the absorbent carrier, substantially covering the absorbent carrier, and pressing the absorbent carrier toward the handle and another mesh between the handle and the absorbent carrier for improving the quantitative elution and the rate of elution of the reagent into a liquid when the absorbent carrier is immersed therein; and immersing the absorbent carrier in the liquid for the elution.

4,605,630

LARGE-LIPOSOME AGGLUTINATION REAGENT AND METHOD

Viola T. Kung, Menlo Park; Francis J. Martin, San Francisco, and Yolanda P. Vollmer, Daly City, all of Calif., assignors to Cooper Lipotech Inc., Menlo Park, Calif.

Filed Jul. 27, 1983, Ser. No. 517,826

Int. Cl.^{4} G01N *33/544, 33/571;* **B32B** *5/16;* **B01J** *13/00*

U.S. Cl. 436—511 **26 Claims**

1. An agglutination assay reagent comprising

liposomes prepared by forming a dispersion of lipid vesicles having heterogeneous sizes both less than and greater than 1 micron, and treating the dispersion to remove vesicles whose sizes are less than about 1 micron,

each liposome having a surface array of ligand molecules at a surface concentration effective to produce liposome agglutination within about 5 minutes, when the reagent is incubated at room temperature with a multivalent ligand-binding analyte on a slide, and

a dye trapped by the liposomes at a concentration effective to allow said agglutination to be visualized directly without magnification on a slide.

9. A rapid agglutination assay method for determination of a multivalent ligand-binding analyte, said method comprising

providing a suspension of liposomes (a) prepared by forming a dispersion of lipid vesicles having heterogeneous sizes both less than and greater than 1 micron, and treating the dispersion to remove vesicles whose sizes are less than about 1 micron, and (b) having a surface array of ligand molecules and a trapped dye, and

mixing the suspension with the analyte on a slide to produce liposome agglutination which is readily detectable, without magnification, within about five minutes at room temperature.

4,605,631

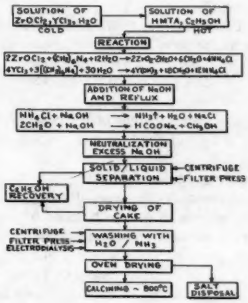
ADVANCED PREPARATION OF CERAMIC POWDERS

Giulio A. Rossi, Shrewsbury, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 19, 1984, Ser. No. 590,801

Int. Cl.^{4} C04B *35/00, 35/48*

U.S. Cl. 501—1 **12 Claims**



1. A process for the preparation of sinterable metal oxide ceramic powders, comprising the steps of:

(a) forming a first solution of an ammonia donor in a water-miscible organic liquid and a second solution of salts of all the metals whose oxides are present in said metal oxide ceramic powders, said second solution also containing sufficient water to produce by reaction with the ammonia donor in said first solution a sufficient amount of ammonia to precipitate at least part of the cations of the metal salts in said second solution when such ammonia is released into the said second solution;

(b) mixing said first solution and said second solution while maintaining a temperature of at least 60° C. in the reaction vessel, so as to form a solid precipitate containing at least part of the ceramic metal content originally in said second solution;

(c) treating said solid precipitate with alkali for a sufficient time to prevent discoloration of the precipitate upon subsequent heating to 400° C.;

(d) neutralizing the alkali remaining after said treating of part (c) to produce a pH of 7.0±0.2 in the liquid phase in contact with said solid precipitate;

(e) separating the solid phase remaining after part (d) from the bulk of the liquid phase present therewith after part (d);

(f) washing the solid phase remaining after part (e) with sufficient aqueous ammonia to remove substantially all the soluble inorganic matter and the last traces of organic matter from said solid phase.

(g) drying and calcining the solid phase remaining after part (f) by heating it for a sufficient time at a temperature sufficient to yield a stable crystal phase and degree of hydration if any for sintering but not so high as to cause appreciable sintering or coarsening of particle size in said solid phase.

4,605,632

GLASS FOR TUNGSTEN-HALOGEN LAMPS

Thomas H. Elmer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,351

Int. Cl.^{4} C03C *3/06*

U.S. Cl. 501—54 **1 Claim**

1. A transparent, high silica glass envelope for a tungsten-halogen incandescent lamp, said glass exhibiting an annealing point between about 900°-925° C. and a β_{OH} value below 0.4 mm^{-1} and consisting essentially, expressed in terms of weight

percent on the oxide basis, of about 1–2.5% Al_2O_3, 0.25–1% CaO, 0.1–0.25% Na_2O and/or K_2O, 2.5–3.5% B_2O_3, 0.15–0.3% F, and the remainder SiO_2.

4,605,633

REACTION SINTERED MULTIPHASE CERAMIC

Thomas P. DeAngelis, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,673

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.[4] C04B *35/56, 35/58*

U.S. Cl. 501—87 **21 Claims**

1. A reaction sintered multiphase ceramic body consisting essentially of a fine-grained, homogeneous, intimate interdispersion of:

(a) 5–95 mole percent of nitride phase or phases having a maximum grain size substantially not greater than 10 μm and being nitride of one or both of Al and Si, and

(b) 5–95 mole percent of second phase or phases having a maximum grain size substantially not greater than 10 μm and being boride, carbide, silicide, sulfide or combination thereof of one or more of the elements of Groups 3b including lanthanide and actinide series elements, 4b, 5b and 6b;

which body contains 0 to 4 weight percent oxygen and is prepared by the process comprising:

(c) admixing particulate reactants of maximum particle size substantially not greater than 150 μm and being elements, compounds, intermetallic compounds, alloys or combination thereof in stoichiometric proportions to substantially form the nitride and second phases, and

(d) shaping and heating the admixture to form the reaction sintered body, the heating being done in atmosphere that is nonreactive with the admixture and at temperature at which the reaction and sintering occurs between the reactants to substantially form the nitride and second phases.

4,605,634

REACTION SINTERED OXIDE-BORIDE

Thomas P. DeAngelis, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 454,671, Dec. 30, 1982, abandoned. This application Jun. 27, 1985, Ser. No. 749,559

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

Int. Cl.[4] C04B *35/58*

U.S. Cl. 501—96 **24 Claims**

1. A reaction sintered oxide-boride ceramic body consisting essentially of a fine-grained, homogeneous, intimate interdispersion of:

(a) 10–90 mole percent of boride phase or phases having a maximum grain size substantially not greater than 15 μm and being boride of one or more of the elements of Groups 3b including lanthanide and actinide series elements, 4b, 5b and 6b, and

(b) 10–90 mole percent of oxide phase or phases having a maximum grain size substantially not greater than 15 μm and being oxide of one or more of the elements of Groups 3a, 4a, 3b, 4b, 5b, 6b and 8;

which body is prepared by the process comprising;

(c) admixing particulate reactants of maximum particle size substantially not greater than 150 μm and being elements, compounds, intermetallic compounds, alloys or combination thereof in stoichiometric proportions to substantially form the boride and oxide phases, and

(d) shaping and heating the admixture to form the reaction sintered body, the heating being done in nonreactive atmosphere and at temperature at which the reaction and sintering occurs between the reactants to substantially form the boride and oxide phases.

4,605,635

CARBON-CONTAINING REFRACTORY

Tadashi Zenbutsu, Tokyo; Hiroyuki Kokumai, Atsugi; Shinji Okikawa, and Keiji Saito, both of Zama, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,982

Claims priority, application Japan, Jan. 17, 1984, 59-4769

Int. Cl.[4] C04B *35/52, 35/54, 35/56, 35/58*

U.S. Cl. 501—96 **4 Claims**

1. A carbon-containing refractory composition consisting essentially of 0.1–10 parts by weight of silicon hexaboride, in 100 parts by weight of refractory material, said refractory material consisting essentially of 3–95 parts by weight of carbonaceous material and 97–5 parts by weight of refractory aggregate, said carbonaceous material consisting of natural and artificial graphite, foundry coke, iron coke, petroleum coke and carbon black.

4,605,636

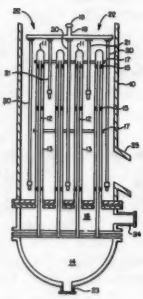
APPARATUS FOR COOLING FLUID SOLID PARTICLES IN A REGENERATION SYSTEM

Paul W. Walters, Ashland; H. Anthony Raiche, Russell, and Lloyd E. Busch, Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 688,469, Jan. 3, 1985. This application Sep. 27, 1985, Ser. No. 780,780

Int. Cl.[4] B01J *29/38*

U.S. Cl. 502—39 **7 Claims**



1. In an improved solid particulate material regeneration system comprising collected fluidized mass(es) of said solid particulate material, the improvement which comprises:

A. regenerating the solid particulate material by combustion of deposited hydrocarbonaceous material on said solid particulate material in a plurality of separate stages arranged for sequential flow of solid particulate material therethrough under regeneration temperature conditions maintained less than 816° C. (1,500° F.);

B. accomplishing said regenerating of solid particulate material in the upper stage of regeneration under conditions providing a flue gas recovered therefrom at an elevated temperature up to about 760° C. (1,400° F.);

C. cooling said solid particulate material flowing downwardly counter-current to fluidized gas in a heat-exchange zone to provide partially-cooled solid particulate material, said heat-exchange zone being provided with a plurality of upwardly extending liquid-carrying heat-exchange conduit combinations and a means for charging said fluidizing gas to a lower half and an upper half of said heat-exchange zone, said means comprising a header means located near the upper end of said heat-exchange zone and having suspended from said header means a plurality of vertical aeration conduits, a first portion of said vertical aeration conduits having their lower ends located in said lower half of said heat-exchange zone and a second portion of said

vertical aeration conduits having their lower ends located in said upper half of said heat-exchange zone.

4,605,637

HYDROTHERMAL ACTIVATION OF ACID ZEOLITES WITH ALUMINUM PHOSPHATES

Clarence D. Chang, Princeton; and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Jan. 22, 1985, Ser. No. 693,444

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.[4] B01J *29/06, 27/14*

U.S. Cl. 502—64 **1 Claim**

1. A hydrothermal method for enhancing acid catalytic activity of low acidity crystalline zeolite which comprises contacting said zeolite, an activating amount of aluminum phosphate and an aqueous liquid medium at elevated temperature under conditions to increase catalytic activity of the zeolite.

4,605,638

HIGHLY ACTIVE CATALYST COMPOSITION FOR POLYMERIZING ALPHA-OLEFINS

Thomas E. Nowlin, Kendall Park, and Klaus P. Wagner, East Windsor, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 444,152, Nov. 24, 1982, Pat. No. 4,481,301, which is a continuation-in-part of Ser. No. 327,534, Dec. 4, 1981. This application Jul. 24, 1984, Ser. No. 633,991

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.[4] C08F *4/62, 4/64, 4/68*

U.S. Cl. 502—104 **76 Claims**

1. A process for preparing a supported catalyst composition for use in alpha-olefin polymerization reactions, said process consisting essentially of the steps of:

(i) contacting a solid, porous carrier having reactive OH groups with a liquid, said liquid containing at least one organomagnesium composition having the empirical formula

$$R_nMgR'_{(2-n)} \quad (I)$$

where R is a C_1–C_{12} hydrocarbyl group, R′ is a halogen, and n is a rational number from about 0.5 to 2, the number of moles of said organomagnesium composition being in excess of the number of moles of said OH groups on said carrier, whereby said organomagnesium composition is reacted with said OH groups on said carrier;

(ii) evaporating said liquid from step (i) to obtain a carrier, containing magnesium, in the form of a dry, free-flowing powder; and

(iii) reacting said powder of step (ii) with at least one transition metal compound in a liquid medium, the number of moles of said transition metal compound being in excess of the number of said OH groups on said carrier prior to the reaction of said carrier with said organomagnesium composition in step (i), said transition metal compound being soluble in said liquid medium, and the magnesium being substantially insoluble in said liquid medium, whereby a reacted form of transition metal which is insoluble in said liquid medium becomes supported on said carrier.

39. A process for preparing a supported catalyst composition for use in alpha-olefin polymerization reactions, said process consisting essentially of the steps of:

(i) contacting, in the absence of an organoaluminum or aluminum halide compound, a solid, porous carrier having reactive OH groups with a liquid, said liquid containing at least one organomagnesium composition having the empirical formula

$$R_nMgR'_{(2-n)} \quad (I)$$

where R and R′ are the same or different C_1–C_{12} hydrocarbyl groups, and n is a rational number from about 0.5 to 2, the number of moles of said organomagnesium composition being in excess of the number of moles of said OH groups on said carrier, whereby said organomagnesium composition is reacted with said OH groups on said carrier;

(ii) evaporating said liquid from step (i) to obtain a carrier, containing magnesium, in the form of a dry, free-flowing powder; and

(iii) reacting said powder of step (ii) with at least one transition metal compound in a liquid medium, the number of moles of said transition metal compound being in excess of the number of said OH groups on said carrier prior to the reaction of said carrier with said organomagnesium composition in step (i), said transition metal compound being soluble in said liquid medium, and the magnesium being substantially insoluble in said liquid medium, whereby a reacted form of transition metal which is insoluble in said liquid medium becomes supported on said carrier.

4,605,639

METHODS FOR MAKING A SUPPORTED IRON-COPPER CATALYST

Paul N. Dyer, Allentown, and Ronald Pierantozzi, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 17, 1985, Ser. No. 755,986

Int. Cl.[4] B01J *21/04, 23/72, 23/78*

U.S. Cl. 502—331 **15 Claims**

1. A method for making a catalytically active composition for Fischer-Tropsch reaction processes comprising:

(a) depositing by chemical precipitation a solution of a copper-containing compound onto an alumina porous substrate;

(b) calcining said depositing copper-containing compound on alumina substrate to form copper oxide on alumina substrate;

(c) depositing by intergrinding an iron-containing compound with said copper oxide on alumina substrate; and

(d) calcining the interground mixture in an inert atmosphere to produce free iron in addition to the copper oxide on the alumina substrate.

4,605,640

OIL-ABSORBENT CELLULOSIC DERIVATIVES

George F. Fanta, Peoria, and William M. Doane, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 29, 1985, Ser. No. 738,815

Int. Cl.[4] B01D *17/04*

U.S. Cl. 502—402 **8 Claims**

1. A composition for absorbing oil from oil-in-water emulsions comprising the reaction product of a cellulose-containing substance having cationic exchange properties and a fatty quaternary ammonium salt.

6. A composition as described in claim 1 wherein said cellulose-containing substance is a graft copolymer of cellulose and a carboxylic acid or sulfonic acid-containing monomer, and wherein the amount of polymerized monomer does not exceed about 8% by weight of the graft copolymer.

4,605,641
SYNTHETIC VASOACTIVE INTESTINAL PEPTIDE ANALOGS

David R. Bolin, Denville; Johannes A. Meienhofer, Upper Montclair, and Iou-Iou Sytwu, Fanwood, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 9, 1984, Ser. No. 658,736
Int. Cl.[4] A61K *37/24;* C07K *7/10*
U.S. Cl. 514—12 29 Claims

1. A compound of the formula

X-His-Ser-Asp-Ala-Val-Phe-Thr-Asp-R-Tyr-R_1-Lys-Gln-R_2-Ala-Val-Lys-Lys-Tyr-Leu-R_3-Leu-R_4

wherein R represents Asn or Ala; R_1 represents Thr-Arg-Leu-Arg, Thr-Lys-Leu-Lys, Thr-Arg-Leu-Lys, Thr-Orn-Leu-Arg, Ser-Arg-Phe-Arg or Thr-Lys-Leu-Arg; R_2 represents Leu, Ile or Nle; R_3 represents Asn-Ser-Ile, Asn-Thr-Ile, Thr-Ser-Ile or Asn-Ser-Val; R_4 represents Asn-NH_2 or Thr-NH_2; and X represents hydrogen or acetylation at the amino terminal, provided that when R_1 is Thr-Arg-Leu-Arg, R may not equal Nle,
and the pharmaceutically acceptable acid or base addition salts thereof.

4,605,642
CRF ANTAGONISTS

Catherine L. Rivier; Jean E. F. Rivier; Wylie W. Vale, Jr., all of La Jolla, and Marvin R. Brown, Del Mar, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Feb. 23, 1984, Ser. No. 583,092
Int. Cl.[4] C07K *7/10;* A61K *37/24*
U.S. Cl. 514—12 20 Claims

4. A peptide having the formula: Y-R_8-R_9-leu-R_{11}-R_{12}-R_{13}-leu-leu-Arg-R_{17}-R_{18}-R_{19}-Glu-R_{21}-R_{22}-R_{23}-R_{24}-R_{25}-R_{26}-R_{27}-R_{28}-R_{29}-Gln-ala-R_{32}-R_{33}-Asn-Arg-R_{36}-R_{37}-R_{38}-R_{39}-R_{40}-R_{41}-NH_2 wherein Y is acetyl, formyl, acrylyl, benzoly or hydrogen; R_8 is ala, Gly, Gln, Ile, leu, Nle, Phe, Val or des-R_8; R_9 is Asp, Glu or des-R_9; R_{12}, R_{19} and R_{24} are selected from the group consisting of leu, Ile, ala, Asn, Gly, Val, Nle, Phe and Gln; R_{11} is Thr or Ser; R_{13} is His, Tyr or Glu; R_{17} is Glu, Asn or Lys; R_{18} is Val, Nle or Met; R_{21} is Met, Nva, Ile, ala, leu, Gly, Nle, Val, Phe or Gln; R_{22} is ala or Thr or Glu; R_{23} is Arg, Orn, Har or Lys; R_{25} is Asp or Glu; R_{26} is Gln, Asn or Lys; R_{27} is leu, Ile, ala, Val, Nva, Met, Nle, Phe, Asp, Asn, Gln or Glu; R_{28} is ala, Arg or Lys; R_{29} is Gln or Glu, R_{32} is His, Gly, Tyr or ala; R_{33} is Ser, Asn, leu, Thr or ala; R_{36} is Lys, Orn, Arg, Har or leu; R_{37} is leu or Tyr; R_{38} is Met or leu; R_{39} is Glu or Asp; R_{40} is Ile, Thr, Glu, ala, Val, leu, Nle, Phe, Nva, Gly or Gln; and R_{41} is ala, Ile, Gly, Val, leu, Nle, Phe, Nva or Gln; or a non toxic addition salt thereof.

4,605,643
OVINE GRF

Peter Bohlen, Encinitas, Calif.; Paul E. Brazeau, Outremont, Canada; Frederick S. Esch, Oceanside, Calif.; Nicholas C. Ling, and William B. Wehrenberg, both of San Diego, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Mar. 2, 1984, Ser. No. 585,814
Int. Cl.[4] A61K *37/43;* C07K *7/10*
U.S. Cl. 514—12 12 Claims

1. A peptide having the formula: H-Tyr-Ala-Asp-Ala-Ile-Phe-Thr-Asn-Ser-Tyr-Arg-Lys-Ile-Leu-Gly-Gln-Leu-Ser-Ala-Arg-Lys-Leu-Leu-Gln-Asp-Ile-Met-Asn-Arg-Gln-Gln-Gly-Glu-Arg-Asn-Gln-Glu-Gln-Gly-Ala-Lys-Val-Arg-Leu-Ywherein Y is OH or NH_2 or a nontoxic salt of said peptide.

4,605,644
METHOD FOR STIMULATING RECOVERY FROM ISCHEMIA EMPLOYING RIBOSE AND ADENINE

John E. Foker, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

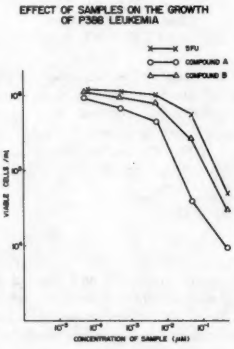
Filed Feb. 7, 1985, Ser. No. 699,037
Int. Cl.[4] A61K *31/70*
U.S. Cl. 514—45 7 Claims

1. A method for reducing the recovery time of tissue function following ischemic insult comprising:
(a) perfusing said tissue with a solution incorporating adenine and ribose in an amount effective to restore the tissue ATP level and tissue function to levels substantially equal to those present in the preischemic tissue; and
(b) continuing said perfusion until the tissue maintains its restored function and ATP level when the perfusion is discontinued.

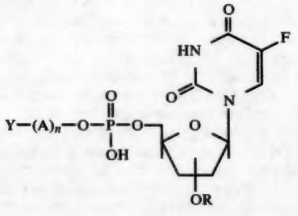
4,605,645
5-FLUORO-2'-DEOXYURIDINE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Kenzo Watanabe; Yoshinori Kato, both of Hino; Masahiko Saito, Tokorozawa; Takeo Oba, Hino; Hisashi Fukushima, and Takeshi Hara, both of Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 9, 1982, Ser. No. 448,087
Claims priority, application Japan, Dec. 9, 1981, 56-196939; May 6, 1982, 57-74478; Oct. 13, 1982, 57-178507
Int. Cl.[4] C07H *15/12, 17/00*
U.S. Cl. 514—51 10 Claims



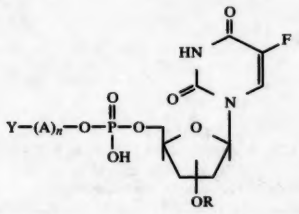
1. 5-fluoro-2'-deoxyuridine derivatives expressed by general formula (1) and their pharmacologically permissible salts


(1)

wherein A indicates a saturated or unsaturated divalent aliphatic hydrocarbon group having 1 to 30 carbon atoms; n indicates 0 or 1, and when n is 0, it indicated that Y is directly bound to an oxygen atom; Y represents a hydrogen atom, phenyl group, halogen-substituted phenyl group, alkyl-substituted phenyl group having 1 to 8 carbon atoms in the alkyl

group, or an acyl substituted phenyl group having 1 to 8 carbon atoms in the acyl group; however, when Y is a hydrogen atom, n is 1; R indicates hydrogen atom or alcohol-protecting group, and wherein, when Y in general formula (1) is a hydrogen atom, A is a member selected from saturated or unsaturated divalent aliphatic hydrocarbon groups having 8 to 24 carbon atoms.

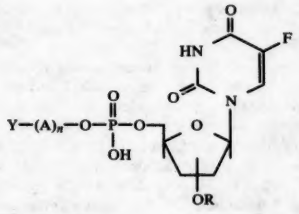
5. An anti-tumor agent comprising a pharmaceutically acceptable carrier and a composition having anti-tumor activity on tumors transplanted into test animals comprising an anti-tumor effective amount of one or more 5-fluoro-2'-deoxyuridine derivatives expressed by the general formula (1) and their pharmacologically permissible salts



(1)

wherein A indicates a saturated or unsaturated divalent aliphatic hydrocarbon group having 1 to 30 carbon atoms; n indicates 0 or 1, and when n is 0, it indicates that Y is directly bound to an oxygen atom; Y represents a hydrogen atom, phenyl group, halogen-substituted phenyl group, alkyl-substituted phenyl group having 1 to 8 carbon atoms in the alkyl group, or an acyl substituted phenyl group having 1 to 8 carbon atoms in the acyl group; however when Y is a hydrogen atom, n is 1; R indicates hydrogen atom or alcohol-protecting group, and wherein, when Y in general formula (1) is a hydrogen atom, A is a member selected from saturated or unsaturated divalent aliphatic hydrocarbon groups having 8 to 24 carbon atoms.

8. A method of anti-tumor therapy comprising the use of a composition having anti-tumor activity on tumors transplanted into test animals comprising an anti-tumor effective amount of 5-fluoro-2'-deoxyuridine derivatives expressed by the general formula (1) and their pharmacologically permissible salts



(1)

wherein A indicates a saturated or unsaturated divalent aliphatic hydrocarbon group having 1 to 30 carbon atoms; n indicates 0 or 1, and when n is 0, it indicates that Y is directly bound to an oxygen atom; Y represents a hydrogen atom, phenyl group, or substituted phenyl group; however, when Y is a hydrogen atom, n is 1; R indicates hydrogen atom or alcohol-protecting group, and wherein, when Y in general formula (1) is a hydrogen atom, A is a member selected from saturated or unsaturated divalent aliphatic hydrocarbon groups having 8 to 24 carbon atoms.

4,605,646

COMPOSITIONS BASED ON VEGETABLE FIBRE AND LACTULOSE

Roberto Bernardi, Milan, Italy, assignor to Farmaco Italiano Padil S.r.l., Milan, Italy

Filed Jul. 16, 1984, Ser. No. 631,106
Claims priority, application Italy, Mar. 28, 1984, 20257 A/84
Int. Cl.[4] A61K *31/70*
U.S. Cl. 514—53 **6 Claims**

1. A laxative composition comprising 5–10 grams of lactulose per 0.5–2.5 grams of raw fibre, and an inert excipient.

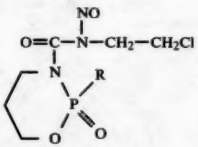
4,605,647

OXAAZAPHOSPHORINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Gilbert Lavielle, and Claude Cudennec, both of La Celle St Cloud, France, assignors to ADIR, S.A.R.L., Neuilly-sur-Seine, France

Filed Jul. 5, 1985, Ser. No. 752,365
Claims priority, application France, Jul. 6, 1984, 84 10731
Int. Cl.[4] A61K *31/66, 31/675;* C07F *9/24, 9/65*
U.S. Cl. 514—85 **8 Claims**

1. Oxaazaphosphorine compounds corresponding to the formula I



I

in which R is selected from the group consisting of:

straight-chain and branched-chain alkyl containing from 1 to 6 carbon atoms inclusive,

cycloalkyl containing from 3 to 7 carbon atoms inclusive,

unsubstituted phenyl and phenyl substituted by, a radical selected from the group consisting of alkyl and alkoxy each containing from 1 to 4 carbon atoms inclusive, and halogen

phenylalkyl containing from 7 to 10 carbon atoms inclusive, and these radicals substituted on the phenyl ring by a substituent selected from the group consisting of halogen and alkyl and alkoxy each containing from 1 to 4 carbon atoms inclusive,

straight-chain and branched-chain alkoxy, containing from 1 to 4 carbon atoms inclusive,

phenoxy and thiophenoxy,

mono- and di-alkylamino containing from 1 to 8 carbon atoms inclusive and these groups mono- and di-substituted by halogen, and

pyrrolidin-1-yl, morpholin-4-yl and piperid-1-yl groups, unsubstituted piperazin-1-yl and piperazin-1-yl substituted in the 4-position, by a substituent selected from the group consisting of straight-chain and branched-chain alkyl containing from 1 to 4 carbon atoms inclusive, cycloalkyl containing from 5 to 7 carbon atoms inclusive, unsubstituted phenyl and unsubstituted phenylalkyl containing from 7 to 10 carbon atoms inclusive, and these phenyl and phenylalkyl substituted on the aromatic ring, by a substituent selected from the group consisting of halogen and straight-chain and branched-chain alkyl and alkoxy each containing from 1 to 4 carbon atoms inclusive,

and also, when R is piperazinyl, their pharmaceutically acceptable acid addition salts.

7. Pharmaceutical compositions containing as active ingredient at least one compound according to claims 1, in combination with one or more inert non-toxic excipients.

4,605,648

TREATMENT OF HERPES SIMPLEX VIRUSES

E. Pendleton Price, P.O. Box 102, Kitty Hawk, N.C. 27949

Filed Aug. 15, 1985, Ser. No. 766,100
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—180 4 Claims

1. A method for treating herpes simplex virus infections which comprises orally administering to a human in need of said treatment an antiviral effective amount of fluoxymesterone.

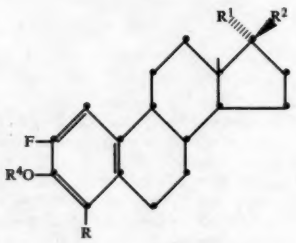
4,605,649

METHOD OF TREATMENT OF ESTROGEN DEFICIENCY DISEASE

Joachim G. Liehr, 115 Beverly La., Bellaire, Tex. 77401

Continuation-in-part of Ser. No. 468,519, Feb. 22, 1983, abandoned. This application Mar. 28, 1984, Ser. No. 594,067
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—182 12 Claims

1. The method of alleviating menopausal symptoms in human females having an inherited susceptibility to cancer of estrogen sensitive tissues which comprises administering to said menopausal female a menopausal symptom relieving dose of a compound of the formula



wherein R is H or F; R^1, when taken singly, is H or ethinyl; R^2, when taken singly, is OH; R^1 and R^2, when taken together, are O= and R^4 is H or CH_3, but can be CH_3 only when R^1 is not H, not to exceed 2 mg./day, thereby reducing the probability of said human female developing cancer in estrogen sensitive tissues induced by the ingestion of estrogens to relieve menopausal symptoms.

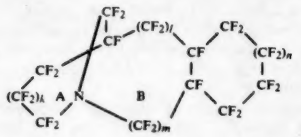
4,605,650

PERFLUORO-1-AZATRICYCLIC AMINE COMPOUNDS USEFUL AS OXYGEN CARRIERS IN ARTIFICIAL BLOOD AND INFUSION FLUIDS

Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuki; Taizo Ono, Osaka; Yoshio Arakawa, Suita; Yoshihisa Inoue, Kyoto; Youichiro Naito, Hirakata, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Division of Ser. No. 505,322, Jun. 17, 1983, Pat. No. 4,542,147. This application Jul. 5, 1983, Ser. No. 751,850
Claims priority, application Japan, Aug. 7, 1982, 57-137663; Aug. 7, 1982, 57-137664; Aug. 7, 1982, 57-137665
Int. Cl.[4] A61K *31/40;* C07D *487/08*
U.S. Cl. 514—183 18 Claims

1. A perfluoro-1-azatricyclic amine compound represented by the formula:



wherein k, l and m are each an integer of from zero to 3 so as to make one of the rings A and B to be 5 membered and the other 7 or more membered; n is zero 1, or 2; any one fluorine of the formula being optionally replaced by a trifluoromethyl group.

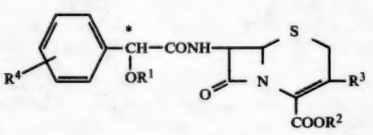
4,605,651

ANTIBIOTIC AMINO ACID DERIVATIVES OF CEPHALOSPORINS

Nobuharu Kakeya, Nagaokakyo; Susumu Nishizawa, Kyoto; Satoshi Tamaki, Moriyama, and Kazuhiko Kitao, Kyoto, all of Japan, assignors to Kyoto Pharmaceutical Industries, Ltd., Kyoto, Japan

Filed Oct. 11, 1983, Ser. No. 540,676
Claims priority, application PCT Int'l Appl., Nov. 10, 1982, PCT/JP82/00437
Int. Cl.[4] A61K *31/545;* C07D *501/36*
U.S. Cl. 514—200 20 Claims

1. A pharmacologically-acceptable antibacterial compound of the formula:



(I)

wherein

R^1 is an α-, β- or γ-amino acid moiety (bonded by the ester linkage), which is optionally substituted by one or two lower alkyl groups at the amino group thereof,

R^2 is a 1-alkanoyloxyalkyl, 1-alkoxycarbonyloxyalkyl, phthalidyl or 5-methyl-1,3-dioxolen-2-on-4-ylmethyl group,

R^3 is a carbamoyloxymethyl group, which is optionally substituted by one or two lower alkyl groups, or a heterocyclothiomethyl group, which is optionally substituted by one or more members selected from the group consisting of alkyl having from 1 to 6 carbon atoms, cycloalkyl having 5 or 6 ring carbon atoms, alkenyl having from 2 to 4 carbon atoms, phenyl, tolyl, halo, hydroxy and amino; the heterocycle of the heterocyclothiomethyl group being pyrrolyl, pyrrolinyl, imidazolyl, pyrazolyl, pyridyl or an N-oxide thereof, pyrimidyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, pyrrolidinyl, imidazolidinyl, piperidino, piperazinyl, indolyl, isoindolyl, indolidinyl, benzimidazolyl, quinolyl, isoquinolyl, indazolyl, benzotriazolyl, oxazolyl, isoxazolyl, oxadiazolyl, morpholinyl, benzoxazolyl, benzoxadiazolyl, thiazolyl, thiadiazolyl, thiazolidinyl, thienyl, benzothiazolyl, benzothiadiazolyl or dihydrooxo-as-triazinyl; and

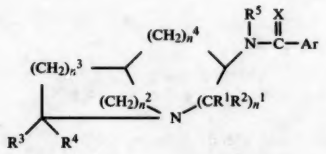
R^4 is a hydrogen atom or a hydroxy group; or a non-toxic salt thereof.

4,605,652
METHOD OF ENHANCING MEMORY OR CORRECTING MEMORY DEFICIENCY WITH ARYLAMIDO (AND ARYLTHIOAMIDO)-AZABICYCLOALKANES

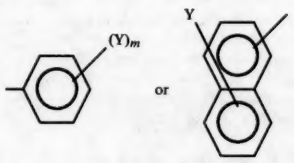
William J. Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Feb. 4, 1985, Ser. No. 697,944
Int. Cl.[4] A61K *31/55*
U.S. Cl. 514—214 19 Claims

1. A method for enhancing learning or memory in living animals in need thereof which comprises administering thereto an effective amount for enhancing learning or memory in said animal of a compound selected from the group having the formula:



wherein n^1, n^2, n^3, and n^4 are zero to three inclusive; R^1, R^2, R^3, and R^4 are hydrogen, loweralkyl or phenyl; R^5 is hydrogen or loweralkyl; X is oxygen or sulfur; Ar is selected from



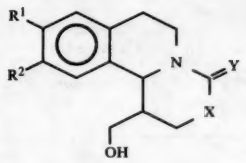
Y is hydrogen, loweralkoxy, loweralkylthio, halo, trifluoromethyl, amino, loweralkylamino, diloweralkylamino, arylamino, acyl, aminosulfonyl, nitro, or aminocarbonyl; m is one to three inclusive; and a pharmaceutically acceptable acid addition salt and a hydrate and an alcoholate thereof and an optical isomer thereof.

4,605,653
1-(HYDROXYMETHYL)-1,6,7,11B-TETRAHYDRO-2H,4H-[1,3]OXAZINO- OR -THIAZINO-[4,3-A]ISOQUINOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Gábor Bernáth; Jeno Kóbor; Ferenc Fölöp, all of Szeged; Attila Sohajda, Kisvárda; Alajos Kálmán, Budapest; Elemér Ezer, Budapest; György Hajós, Budapest; Éva Pálosi, Budapest; László Dénes, Budapest, and László Szporny, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T, Budapest, Hungary

Filed Mar. 19, 1985, Ser. No. 713,533
Claims priority, application Hungary, Mar. 23, 1984, 1162/84
Int. Cl.[4] A61K *31/535, 31/54;* C07D *498/04, 513/04*
U.S. Cl. 514—226 6 Claims

1. 1-(Hydroxymethyl)-1,6,7,11b-tetrahydro-2H,4H[1,3]oxazino- or -thiazino[4,3-a]isoquinoline derivatives of the formula (I),



(I)

wherein

R^1 and R^2 are alkoxy having from 1 to 6 carbon atoms,

X is oxygen or sulfur,

Y is =O, =S or an $=NR^3$ group, wherein

R^3 is hydrogen, alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, phenyl or halo substituted phenyl,

and acid addition and quaternary salts thereof.

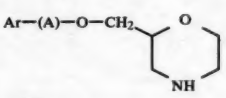
4. A pharmaceutical composition having vasodilating, antispasm and antidiarrhoeic activity comprising as its active ingredient an effective amount of at least one compound of the formula (I) as defined in claim 1 or pharmaceutically acceptable salts thereof, in association with pharmaceutical carriers and/or excipients.

4,605,654
2-(ARYLALKYLOXYMETHYL)MORPHOLINES AND THE CENTRAL NERVOUS SYSTEM COMPOSITIONS

Henri Cousse; Gilbert Mouzin; Jean-Pierre Rieu; Mike Briley, and Antoine Stenger, all of Castres, France, assignors to P. F. Medicament, Paris, France

Filed Dec. 17, 1985, Ser. No. 809,698
Claims priority, application France, Dec. 20, 1984, 84 19553
Int. Cl.[4] A61K *31/535;* C07D *295/08, 413/12*
U.S. Cl. 514—237 3 Claims

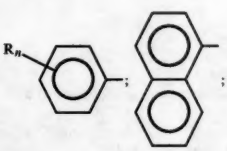
1. 2-(Arylalkyloxymethyl)morpholine derivatives corresponding to the general formula (I):

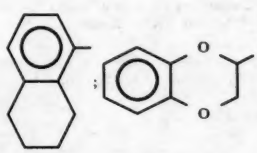


(I)

in which:

Ar denotes an aromatic group, and more especially the following radicals:





in the case where Ar denotes a phenyl radical, R denotes a hydrogen atom, an alkyl, alkoxy or halogen group, a trifluoromethyl radical, a nitro or amino group, a hydroxy group or an arylalkyloxy group,

n denotes the values 1 to 3;

in the case where n=2 or 3, the radicals R can be identical or different, or can form a methylenedioxy or 1,2-ethylenedioxy group; and

A denotes a linear or branched alkylene radical having 1 to 4 carbon atoms or an alkenylene radical having 2 to 3 carbon atoms,

as well as the salts thereof with therapeutically acceptable inorganic or organic acids.

4,605,655

ANTIPSYCHOTIC 1-FLUOROPHENYLBUTYL-4-(2-PYRIMIDINYL)PIPERAZINE DERIVATIVES

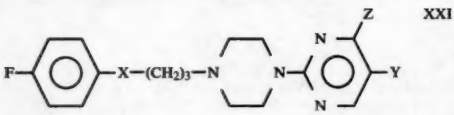
Joseph P. Yevich, Newburgh, and Walter G. Lobeck, Jr., Evansville, both of Ind., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 586,580, Mar. 6, 1984, abandoned. This application Dec. 18, 1984, Ser. No. 683,309

Int. Cl.[4] A61K *31/505;* **C07D** *403/04, 405/14*

U.S. Cl. 514—252 **21 Claims**

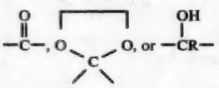
1. A compound of Formula XXI



XXI

and its pharmaceutically acceptable acid addition salts and/or hydrates thereof, wherein

X is



with R being C_{1-4} alkyl, hydrogen, or fluorophenyl,

Y is halogen; and

Z is lower alkoxy or hydrogen.

16. The method for ameliorating an undesirable psychotic state in a mammal comprising oral administration to said mammal of an effective antipsychotic amount of a compound claimed in claim **1**.

4,605,656

PYRIDINE AND PYRAZINE OXIME COMPOUNDS AS FUNGICIDES

Franz Dorn, Dielsdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

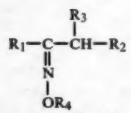
Continuation of Ser. No. 307,395, Oct. 1, 1981, abandoned. This application Oct. 21, 1983, Ser. No. 736,061

Claims priority, application Switzerland, Oct. 10, 1980, 7584/80; Jul. 15, 1981, 4642/81

Int. Cl.[4] C07D *213/53, 241/12;* **A01N** *35/04, 35/10*

U.S. Cl. 514—255 **10 Claims**

1. A compound of the formula



I

wherein R_1 is 2-halo-, 4-halo-, or 2,4-dihalophenyl, R_2 is 3-pyridyl or 2-pyrazinyl, R_3 is hydrogen or straight-chain C_{1-4}-alkyl, and R_4 is C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{3-6}-alkenyl or C_{3-6}-alkynyl

and acid addition salts thereof.

4,605,657

4-QUINAZALONE FUNGICIDES

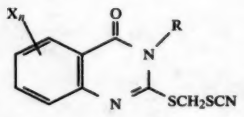
Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 30, 1985, Ser. No. 728,997

Int. Cl.[4] A61K *31/505;* **C07D** *239/95;* **A01N** *43/54*

U.S. Cl. 514—259 **19 Claims**

1. A compound of the formula:



wherein X is independently halogen, lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, nitro, the group $R^1—S(O)_m—$ wherein R^1 is lower alkyl of 1 to 6 carbon atoms and m is 0, 1 or 2, amino or trifluoro methyl; n is 0, 1, 2 or 3; and R is alkyl of 1 to 10 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, lower alkenyl of 2 to 6 carbon atoms or lower alkynyl of 2 to 6 carbon atoms, all optionally substituted with 1 to 3 of the same or different halogen atoms; aryl of 6 to 12 carbon atoms or substituted aryl substituted with 1 to 3 substituents, independently selected from lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, lower alkyl thio of 1 to 4 carbon atoms, lower alkylsulfinyl of 1 to 4 carbon atoms, lower alkyl sulfonyl of 1 to 4 carbon atoms, nitro, cyano or halogen.

8. A method of controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of claim **1**.

4,605,658

ANTIVIRALLY ACTIVE ADENINE DERIVATIVES

Antonin Holý, Prague, Czechoslovakia, and Erik de Clercq, Louvain, Belgium, assignors to Ceskoslovenska Akademie Ved., Prague, Czechoslovakia and Stichting Rega VZW, Louvain, Belgium

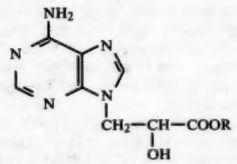
Filed Oct. 5, 1984, Ser. No. 658,438

Claims priority, application Czechoslovakia, Oct. 7, 1983, 7380-83

Int. Cl.[4] A61K *31/52*

U.S. Cl. 514—261 **20 Claims**

1. A method for treating virus diseases which comprises administering to a patient in need of said treatment an effective antiviral amount of a 3-(adenin-9-yl)-2-hydroxypropanoic acid ester of the formula (I):



(I)

wherein R is linear or branched alkyl with the exception of tert-butyl and n-pentyl, n-octyl, methoxyethyl, or cyclohexyl, in (R), (S), or (RS) form.

4,605,659
PURINYL OR PYRIMIDINYL SUBSTITUTED HYDROXYCYCLOPENTANE COMPOUNDS USEFUL AS ANTIVIRALS

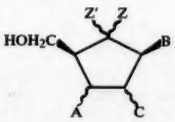
Julien P. H. Verheyden, Los Altos, Calif.; John C. Martin, Fayetteville, N.Y.; G. V. Bindu Madhaven, Palo Alto, Calif.; Daniel P. C. McGee, Mountain View, Calif., and Ernest J. Prisbe, Los Altos, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 30, 1985, Ser. No. 728,954

Int. Cl.[4] A61K *31/52, 31/505;* **C07D** *473/18, 473/34, 239/36, 239/54*

U.S. Cl. 514—262 **45 Claims**

1. A compound of the formula



(I)

wherein

A is hydroxy; and

C is hydrogen or hydroxy;

B is a heterocyclic ring selected from the group consisting of 2-amino-6-hydroxypurin-9-yl, 6-aminopurin-9-yl, 2,4-dioxopyrimidin-1-yl optionally substituted at the 5-position by fluoro, methyl, iodo, trifluoromethyl, 2-bromovinyl, 2-chlorovinyl or 2-iodovinyl, and 4-amino-2-oxopyrimidin-1-yl optionally substituted at position-5 by iodo or trifluoromethyl;

Z is hydrogen and Z′ is hydroxy or fluoro; or

Z and Z′ are both fluoro; or

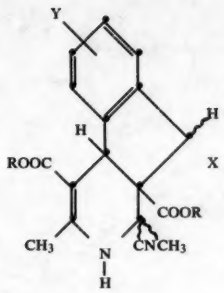
Z together with Z′ is oxo; and

the wavy line indicates that the group may be above or below the plane of the ring; and

the pharmaceutically acceptable acid addition salts thereof.

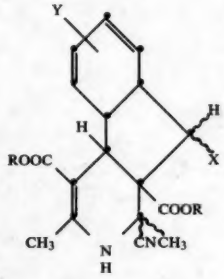
44. A pharmaceutical composition useful for treating viral infections in mammals which comprises an effective amount of at least one compound of claim **1** or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable excipient.

45. A method for treating mammals for viral infections which comprises administering an effective amount of a pharmaceutical composition of claim **44**.



wherein the bond designation indicates that the bond may be either above or below the plane of the molecule; X is hydroxy, halogen or acyloxy, Y is hydrogen, nitro, halogen or trifluoromethyl, and R is lower alkyl; wherein acyloxy is an ester group derived from R′COOH where R′ is from 1 to 6 carbon atoms.

10. A pharmaceutical composition useful in providing a calcium entry blocker in the chemotherapeutic treatment of cardiovascular diseases comprising a compound having the structure



wherein the bond designation indicates that the bond may be above or below the plane of the ring; X is hydroxy, halogen or acyloxy, Y is hydrogen, nitro, halogen or trifluoromethyl, and R is lower alkyl and pharmaceutically acceptable salts thereof; wherein acyloxy is an ester group derived from an aliphatic acid R′COOH where R′ is from 1 to 6 carbon atoms, and containing per dosage unit from about 10 to about 500 mg of the active ingredient.

4,605,660
INDENO[2,1-C]PYRIDINE COMPOUNDS, AND THEIR USE AS CALCIUM CHANNEL BLOCKERS

David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 3, 1985, Ser. No. 740,617

Int. Cl.[4] A61K *31/395;* **C07D** *221/16*

U.S. Cl. 514—290 **11 Claims**

1. A compound having the structure:

4,605,661
AROMASTASE INHIBITING α,α-DIARYLIMIDAZOLE-4(5)-PROPIONITRILES, α,α-DIARYLIMIDAZOLE-4(5)-PROPIONAMIDES, AND 4(5)-(2,2-DIARYLETHYL)IMIDAZOLES

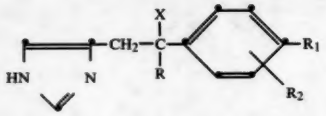
Kenneth S. Hirsch, New Palestine, and Richard P. Pioch, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,594

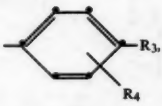
Int. Cl.[4] A61K *31/415, 31/44;* **C07D** *233/64, 401/06*

U.S. Cl. 514—400 **18 Claims**

1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula

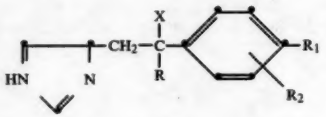


wherein
R is pyridyl or

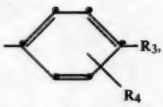


X is —CN, —$CONH_2$, or hydrogen, and
R_1, R_2, R_3, and R_4 are independently hydrogen, methyl, methoxy, fluoro, chloro, bromo, or trifluoromethyl,
or a pharmaceutically acceptable salt thereof.

16. A compound of the formula



wherein
R is pyridyl or



X is —$CONH_2$, and
R_1, R_2, R_3, and R_4 are independently hydrogen, methyl, methoxy, fluoro, chloro, bromo, or trifluoromethyl, or a pharmaceutically acceptable salt thereof.

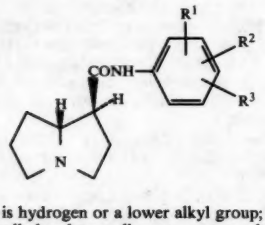
4,605,662

1-SUBSTITUTED PYRROLIZIDINE DERIVATIVES AND ANTIARRHYTHMIC USE THEREOF

Seiji Miyano, Fukuoka; Kunihiro Sumoto, Ohnojo; Fumio Satoh, Nagaokakyo, and Hidetsura Cho, Ibaraki, all of Japan, assignors to Suntory Ltd., Osaka, Japan

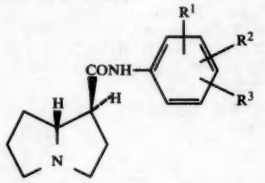
Filed Sep. 6, 1983, Ser. No. 529,548
Claims priority, application Japan, Sep. 9, 1982, 57-157819
Int. Cl.[4] C07D *487/04;* A61K *31/40*
U.S. Cl. 514—413 **10 Claims**

1. A 1-substituted pyrrolizidine compound of the formula:



(wherein R^1 is hydrogen or a lower alkyl group; R^2 is hydrogen, a lower alkyl or lower alkoxy group, or a halogen; R^3 is hydrogen, a lower alkyl, lower alkoxy or amino group, or a halogen).

6. A pharmaceutical composition useful for providing an antiarrhythmic effect, said composition comprised of an antiarrhythmic effective amount of a 1-substituted pyrrolizidine compound of the formula:



(wherein R^1 is hydrogen or a lower alkyl group; R^2 is hydrogen, a lower alkyl or alkoxy group, or a halogen; R^3 is hydrogen, a lower alkyl, lower alkoxy or amino group, or a halogen) and a pharmaceutical acceptable carrier.

8. A method of inhibiting arrhythmias in a host afflicted with such arrhythmias, which comprises administering to said host an antiarrhythmic effective amount of the pharmaceutical composition of claim **6**.

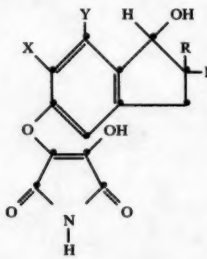
4,605,663

USE OF SUBSTITUTED-3-(2,3-DIHYDRO-1H-INDEN-5-YL)-4-HYDROXY-1H-PYRROLE-2,5-DIONES, FOR TREATMENT OF GREY MATTER EDEMA

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1984, Ser. No. 606,085
Int. Cl.[4] A61K *31/40*
U.S. Cl. 514—425 **1 Claim**

1. A method of treating persons with grey matter edema which comprises administering to such a person an effective amount of a compound of the formula:



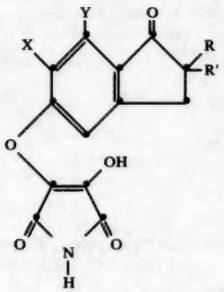
in which
R and R′ are different entities and wherein R is C_3–C_6 cycloalkyl, C_3–C_6 cycloalkyl lower alkyl, aryl selected from phenyl, halophenyl, methoxyphenyl, hydroxyphenyl, thienyl, aralkyl selected from benzyl and phenethyl, lower alkyl, lower alkenyl, lower, alkynyl;
R′ is lower alkyl, lower alkenyl, lower alkynyl; wherein the term lower indicates up to four carbon atoms;
X and Y are each selected from methyl and chloro; and the pharmaceutically acceptable salts thereof.

4,605,664
USE OF SUBSTITUTED-3-(2,3-DIHYDRO-1H-INDEN-5-YL)-4-HYDROXY-1H-PYRROLE-2,5-DIONES FOR TREATMENT OF GREY MATTER EDEMA

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1984, Ser. No. 605,743
Int. Cl.[4] A61K *31/40*
U.S. Cl. 514—425 **1 Claim**

1. A method of treating persons with grey matter edema which comprises administering to such a person an effective amount of a compound of the formula:



in which

R and R′ are different entities and wherein R is cycloalkyl, cycloalkyl-lower alkyl, phenyl. halophenyl, methoxyphenyl, hydroxyphenyl, thienyl, benzyl, phenethyl, lower alkyl, lower alkenyl, lower alkynyl;

R′ is lower alkenyl, lower alkynyl or lower alkyl; wherein the term lower indicates up to four carbon atoms;

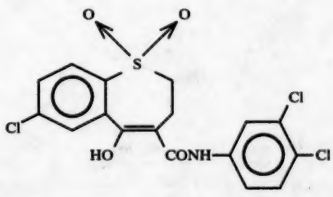
X and Y are each selected from methyl and chloro; and the pharmaceutically acceptable salts thereof.

4,605,665
SYSTEMIC TREATMENT OF SPLANCHNIC ISCHEMIA SHOCK USING 7-CHLORO-N-(3,4-DICHLOROPHENYL)-2,3-DIHYDRO-5-HYDROXY-1-BENZOTHIEPIN-4-CARBOXAMIDE 1,1-DIOXIDE AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Hui L. Liauw, Wycoff; Howard H. Oei, Basking Ridge, and Edmond C. Ku, Upper Saddle River, all of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 28, 1985, Ser. No. 706,588
Int. Cl.[4] A61K *31/38*
U.S. Cl. 514—431 **4 Claims**

1. A method of treating shock induced by splanchnic ischemia in a mammal by parenterally administering an effective cyclooxygenase and lipoxygenase inhibiting amount of a compound of the formula



(I)

or a pharmaceutcally acceptable salt thereof to said mammal in need of the same.

4,605,666
PROCESS FOR PREPARING SPRAY-DRIED POWDERS CONTAINING A WATER-SOLUBLE VITAMIN AND POWDERS PREPARED THEREBY

Douglass N. Schmidt, Grosse Ile; Jeffrey L. Finnan, Southgate, and Rudolph E. Lisa, Grosse Ile, all of Mich., assignors to BASF Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 544,522, Oct. 24, 1983, abandoned. This application Oct. 23, 1984, Ser. No. 686,143
Int. Cl.[4] A61K *31/365*
U.S. Cl. 514—474 **11 Claims**

1. A process for preparing free flowing, lubricated, water-soluble vitamin powders, which are directly compressible into a tablet, which comprises spray drying

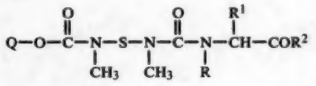
an aqueous slurry of a water-soluble vitamin and a binder in the presence of a lubricant which is added to the drying chamber wherein the amounts of water-soluble vitamin, binder, and lubricant are such that the resulting powder will contain at least 80 percent by weight of water-soluble vitamin, no more than 15 percent by weight of binder, and from 0.5 to 5.0 percent by weight of lubricant.

4,605,667
PESTICIDAL WATER-SOLUBLE AMINOACID SULFENYLATED CARBAMATES

Chennupati K. Rao, Bhopal, India, and Themistocles D. D'Silva, Chapel Hill, N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1985, Ser. No. 717,544
Int. Cl.[4] A01N *47/10, 37/34;* C07C *119/18, 149/43*
U.S. Cl. 514—477 **20 Claims**

1. A compound of the formula:

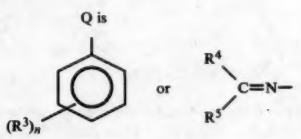


wherein

R is hydrogen or methyl; R^1 is hydrogen, alkyl, alkylthio, hydroxyalkyl, phenylalkyl, or hydroxyphenylalkyl containing from 1 to 6 aliphatic carbon atoms;

R^2 is hydroxy, amino, or an alkali metal, alkaline earth metal, ammonium or alkyl-ammonium salt thereof; or alkoxy, alkylamino or dialkylamino wherein each alkyl moiety may contain from 1 to 6 carbon atoms; and

Q is



wherein

n is 1, 2, 3 or 4;

each R^3 is independently halogen, alkyl, alkoxy, alkylthio, dialkylamino, or alkoxyamido wherein each R^3 independently contains no more than six aliphatic carbon atoms;

R^4 is aminocarbonyl, alkyl, alkylthioalkyl, alkoxyalkyl, cyanoalkyl, nitroalkyl, amidoalkyl, dialkylaminocarbonyl, aminocarbonylalkyl or dialkylaminocarbonylalkyl wherein each alkyl moiety can contain from one to six carbon atoms; and

R^5 is hydrogen, alkylthio, cyanoalkylthio or amidoalkylthio wherein each alkyl moiety can contain from one to six carbon atoms.

16. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound according to claim 1.

4,605,668

FUNGICIDAL CARBAMATE COMPOUNDS

Junya Takahashi; Toshiro Kato, both of Hyogo; Hiroshi Noguchi, Osaka; Yukio Oguri, Osaka; Shigeo Yamamoto, Osaka, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

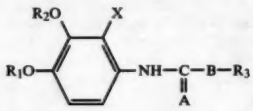
Filed Apr. 12, 1984, Ser. No. 599,625

Claims priority, application Japan, May 17, 1983, 58-87150; May 18, 1983, 58-87974

Int. Cl.[4] C07C *125/065;* **A01N** *47/20*

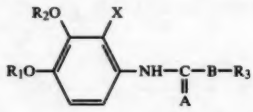
U.S. Cl. 514—485 **8 Claims**

1. A compound of the formula:



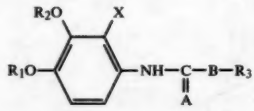
wherein R_1, R_2 and R_3 are, the same or different, each a lower alkyl group, X is a halogen atom or a lower alkyl group and A and B are each an oxygen atom.

4. A fungicidal composition which comprises as an active ingredient a fungicidally effective amount of a compound of the formula:



wherein R_1, R_2 and R_3 are, the same or different, each a lower alkyl group, X is a halogen atom or a lower alkyl group and A and B are each an oxygen atom, and an inert carrier or diluent.

7. A method for controlling drug-resistant strains of plant pathogenic fungi which comprises applying a fungicidally effective amount of at least one of the compounds of the formula:



wherein R_1, R_2, R_3, X, A and B are each as defined in claim 1, to said drug-resistant strains of plant pathogenic fungi.

4,605,669

LIPOXYGENASE INHIBITING NAPHTHOHYDROXAMIC ACIDS

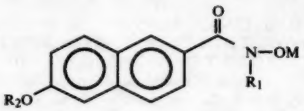
James B. Summers, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1985, Ser. No. 727,464

Int. Cl.[4] A61K *31/185, 31/205;* **C07C** *83/10*

U.S. Cl. 514—575 **9 Claims**

1. A compound of the formula



where

R_1 is H, or C_1 to C_6 alkyl;

R_2 is selected from C_1 to C_{22} alkyl, cycloalkyl, aralcy or alkenyl; and

M is a pharmaceutically acceptable cation.

5. A method of inhibiting lipoxygenase activity in a human or lower animal host in need of such treatment, comprising administering to the human or lower animal host a compound according to claim 1 in an amount effective to inhibit lipoxygenase activity in the host.

4,605,670

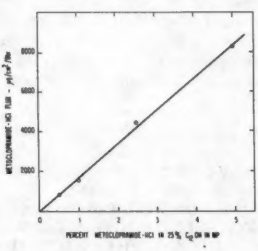
METHOD FOR PERCUTANEOUSLY ADMINISTERING METOCLOPRAMIDE

Kenichiro Saito, Menlo Park; Jorge Heller, Woodside, and Wilfred A. Skinner, Portla Valley, all of Calif., assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

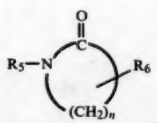
Filed Feb. 1, 1984, Ser. No. 576,087

Int. Cl.[4] A61K *31/165, 47/00*

U.S. Cl. 514—619 **10 Claims**



1. A method of percutaneously administering metoclopramide to a mammal which comprises applying to the skin of the mammal metoclopramide in a carrier system which comprises at least one member selected from the group consisting of a monovalent alcohol ester of an aliphatic monocarboxylic acid having 8 to 32 carbon atoms, an aliphatic monoalcohol having 6 to 24 carbon atoms, and mixtures thereof, at least one member selected from the group consisting of compounds of the formula:



where R_5 is H or a C_1–C_4 alkyl group, R_6 is a C_1–C_4 alkyl group and n is 3, 4 or 5, wherein the esters, alcohols and compounds of the formula have a melting point below 38° C. and a C_3–C_6 diol.

4,605,671
PARENTERAL FORMULATION

Joyce L. DeYoung, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 655,976, Sep. 28, 1984, abandoned. This application Jul. 23, 1985, Ser. No. 757,992
Int. Cl.[4] A61U *31/135*
U.S. Cl. 514—647 6 Claims

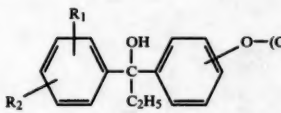
1. A parenterally acceptable, aqueous composition consisting essentially of from 0.2 to about 2.0 percent weight/volume of (−)-13β-amino-5,6,7,8,9,10,11,12-octahydro-5α-methyl-5,11-methanobenzocyclodecen-3-ol; from about 30 to about 45 percent weight/volume propylene glycol; from about 0.5 to about 2.0 percent weight/volume of lactic acid buffered with a pharmaceutically acceptable base to afford a pH of from about 3.5 to about 5.0; and from 0 to 0.02 percent weight/volume of sodium or potassium metabisulfite, in water for injection.

4,605,672
DIETHYLAMINOALKOXYBENZHYDROL DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Tóth; József Törley; György Fekete; László Szporny; László Vereczkey; Éva Pálosi; Imre Klebovich; Pál Vittay; Sándor Görög, and István Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Dec. 27, 1983, Ser. No. 565,912
Claims priority, application Hungary, Dec. 28, 1982, 4182/82
The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.
Int. Cl.[4] A61K *31/135, 31/205*
U.S. Cl. 514—648 9 Claims

1. Diethylaminoalkoxybenzhydrol derivatives of the formula (I)



(I)

wherein

R_1 is hydrogen, halogen, trihalomethyl, alkyl having from one to 4 carbon atoms or alkoxy having from one to 4 carbon atoms,

R_2 is halogen, trihalomethyl, or alkoxy having from one to 4 carbon atoms, and

n is 1, 2, 3 or 4,

and a pharmaceutically acceptable acid addition and quaternary salts thereof.

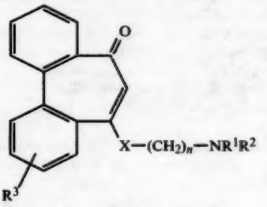
5. A method of treating ethanol intoxication narcosis and depression which comprises administering to a susceptible subject an effective amount of a compound as defined in claim 1.

4,605,673
7H-DIBENZO(A,C)CYCLOHEPTEN-5-ONE-(7) DERIVATIVES

Gerhard Satzinger, Denzlingen; Edgar Fritschi, and Manfred Herrmann, both of St. Peter, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 19, 1983, Ser. No. 562,690
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248094
Int. Cl.[4] A61K *31/135*
U.S. Cl. 514—654 9 Claims

1. A compound of the formula



(I)

wherein

R^1 and R^2 are independently hydrogen, an alkyl radical containing 1 to 3 carbon atoms or, together with the nitrogen atom to which they are attached form a heterocyclic ring containing 3 to 6 carbon atoms;

n is 2 or 3;

R^3 is a hydrogen atom or a halogen atom, and

X is either a methylene group or an oxygen atom

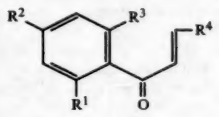
and the pharmacologically acceptable salts thereof with inorganic or organic acids.

4,605,674
SUBSTITUTED ACETOPHENONES AND COMPOSITIONS CONTAINING THEM

Morio Fujiu, Fujisawa; Yasuji Suhara, and Hideo Ishitsuka, both of Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 276,578, Jun. 23, 1981, abandoned, which is a continuation of Ser. No. 114,524, Jan. 23, 1980, abandoned. This application Apr. 24, 1984, Ser. No. 602,633
Claims priority, application United Kingdom, Jan. 26, 1979, 7902907
Int. Cl.[4] A61K *31/38, 31/34*
U.S. Cl. 514—685 15 Claims

1. A method for treating an animal afflicted with a viral infection, which method comprises administering to such animal a compound of the formula:



I

wherein

R^1 represents hydroxy; acyloxy derived from an aliphatic acid having 2–18 carbon atoms or derived from a heterocyclic carboxylic acid containing one or more nitrogen atoms; lower alkoxycarbonyloxy; aminoacyloxy or carboxyalkanoyloxy;

R^2 represents lower alkoxy;

R^3 represents hydrogen or lower alkoxy; and

R^4 represents phenyl which is unsubstituted or substituted by one or more substituents selected from the group consisting of lower alkyl, lower alkoxy, benzyloxy, allyloxy, alkylthio, dialkylamino, amino, cyano, hydroxy, halo and alkylenedioxy; or pyridyl, furyl, thienyl or pyrrolyl any of which is unsubstituted or substituted by lower alkyl, in an amount effective for inhibiting viral infections.

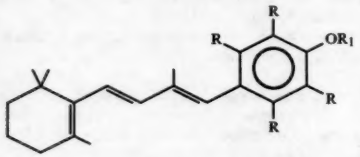
4,605,675

POLYENE COMPOUNDS USEFUL IN THE TREATMENT OF ALLERGIC RESPONSES

Bernard Loev, Scarsdale, and Wan-Kit Chan, Yorktown Heights, both of N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Oct. 16, 1985, Ser. No. 787,843
Int. Cl.[4] A61K *31/05, 31/075*
U.S. Cl. 514—720 2 Claims

1. A therapeutic composition for the treatment of inflammatory conditions and allergic responses in a human host, in combination with at least one pharmaceutically acceptable extender, a therapeutically effective amount of a compound of the formula



in which R is H or an alkyl group of from 1 to 5 carbon atoms, R_1 is H, lower alkyl of from 1 to 8 carbon atoms or aralkyl, or a pharmaceutically acceptable salt thereof.

4,605,676

SYNTHESIS GAS CONVERSION USING ROR-ACTIVATED CATALYST

Thaddeus P. Kobylinski, Prospect; Charles L. Kibby, Gibsonia; Richard B. Pannell, Allison Park, and Elizabeth L. Eddy, Gibsonia, all of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 635,911, Jul. 30, 1984, which is a continuation-in-part of Ser. No. 310,969, Oct. 13, 1981, abandoned, and a continuation-in-part of Ser. No. 540,662, Oct. 11, 1983, Pat. No. 4,493,905, which is a division of Ser. No. 310,977, Oct. 13, 1981, Pat. No. 4,413,064. This application May 15, 1985, Ser. No. 734,189
The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—700 21 Claims

1. A process for the conversion of synthesis gas to a product containing liquid hydrocarbons with an activated, supported catalyst prepared by a process comprising

(A) depositing cobalt or nickel precursor on a refractory metal oxide support by impregnation or precipitation to distribute cobalt or nickel as crystallites on said support to form a supported catalyst, and

(B) activating said supported catalyst by subjecting said supported catalyst to the steps, in sequence, of (i) reduction in hydrogen gas, (ii) oxidation in an oxygen-containing gas and (iii) reduction in hydrogen gas, steps (i), (ii) and (iii) being conducted at a temperature of from about 100° to about 450° C. to form an, activated, supported catalyst more active for conversion of synthesis gas after said step (iii) than after said step (i), and

contacting synthesis gas comprising hydrogen and carbon monoxide under synthesis gas conversion conditions with said, activated catalyst to form a product containing liquid hydrocarbons.

4,605,677

PROCESS FOR C_1–C_4 ALKANOL PRODUCTION FROM SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1985, Ser. No. 780,348
Int. Cl.[4] C07C *27/06*
U.S. Cl. 518—700 17 Claims

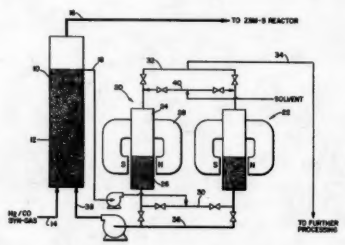
1. An improved process for making C_1–C_4 alkanols with an especially high proportion of ethanol which comprises contacting a mixture of synthesis gas (e.g. carbon monoxide and hydrogen) at a pressure of at least 30 atm and at a temperature of at least 150° C. with a catalyst system comprising a ruthenium-containing compound and a cobalt-containing compound dispersed in a low melting quaternary phosphonium salt wherein improved selectivity for total C_1–C_4 alkanols and ethanol in particular is achieved by use of an N-heterocyclic promoter.

4,605,678

SEPARATION OF CATALYST FROM SLURRY BUBBLE COLUMN WAX AND CATALYST RECYCLE

James A. Brennan; Arthur W. Chester, and Yung-Feng Chu, all of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 479,523, Mar. 28, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,916
Claims priority, application South Africa, Mar. 12, 1984, 84/1832
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—700 33 Claims



1. In an improved process for converting synthesis gas comprising hydrogen and carbon monoxide to hydrocarbons by means of a slurry Fischer-Tropsch synthesis wherein a catalyst having activity for reducing carbon monoxide is dispersed in a liquid to form a slurry in a reaction zone and a wax product is produced by said synthesis in said reaction zone, said wax product having magnetic catalyst fines contained therein, the improvement comprising:

removing said wax product from said slurry and passing said removed wax product through high magnetic field gradients, said high magnetic field gradients being produced by a magnetic filter element placed between the poles of a magnet, said wax product being passed through said filter element, whereby said catalyst fines are held by said magnetic field gradients and separated from said wax product to yield a purified wax product and separated catalyst fines, turning off said magnetic field, and backwashing said filter element with a portion of said purified wax product to return said catalyst fines to said slurry in said reaction zone, whereby the ratio of catalyst-to-slurry is maintained substantially constant.

4,605,679

ACTIVATED COBALT CATALYST AND SYNTHESIS GAS CONVERSION USING SAME

Thaddeus P. Kobylinski, Prospect; Charles L. Kibby, Gibsonia; Richard B. Pannell, Allison Park, and Elizabeth L. Eddy, Gibsonia, all of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 635,911, Jul. 30, 1984, which is a continuation-in-part of Ser. No. 310,969, Oct. 13, 1981, abandoned, and Ser. No. 540,662, Oct. 11, 1983, Pat. No. 4,493,905, which is a division of Ser. No. 310,977, Oct. 13, 1981, Pat. No. 4,413,064. This application May 15, 1985, Ser. No. 734,188

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—700 17 Claims

1. A process for the conversion of synthesis gas to a product containing liquid hydrocarbons with an, activated, supported catalyst prepared by the steps, in sequence, of

(A) impregnating an alumina or silica support with a cobalt carbonyl,

(B) subjecting said cobalt carbonyl-impregnated alumina or silica support to an activation procedure comprising the steps of, in sequence, (i) reduction in hydrogen, (ii) oxidation with an oxygen-containing gas, and (iii) reduction in hydrogen, said activation procedure being conducted at a temperature below about 450° C., to produce an, activated catalyst having an activity after said step (iii) that is greater than the activity of the catalyst after said step (i), and

contacting a synthesis gas comprising hydrogen and carbon monoxide under synthesis conversion conditions with said, activated catalyst to form a product containing liquid hydrocarbons.

4,605,680

CONVERSION OF SYNTHESIS GAS TO DIESEL FUEL AND GASOLINE

Harold Beuther, Cheswick; Charles L. Kibby, Gibsonia; Thaddeus P. Kobylinski, Prospect, and Richard B. Pannell, Allison Park, all of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 301,973, Oct. 13, 1981, abandoned. This application Aug. 23, 1985, Ser. No. 768,923

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—715 30 Claims

1. A process for the conversion of synthesis gas to diesel fuel and gasoline, which comprises contacting synthesis gas consisting essentially of CO and hydrogen in a synthesis gas conversion zone with a synthesis gas conversion catalyst comprising cobalt and 0 to about 100 parts by weight of a Group IIIB or IVB metal oxide per 100 parts by weight of said cobalt, on a high surface area, high purity, low acidity alumina support of gamma-alumina, eta-alumina or mixtures thereof, said catalyst having a hydrogen chemisorption value of from about 100 to about 300 micromol of hydrogen per gram of total catalyst when measured at 25° C., said catalyst having been prepared by (A) impregnation of said alumina support with a non-aqueous, organic solvent impregnation solution of cobalt nitrate and (B) reduction of said impregnated alumina support by heating, in the presence of hydrogen gas, at a heating rate of from about 0.5° to about 5° C. per minute to a maximum hold temperature in the range of 180° to about 220° C. for a hold time of 6 to about 24 hours and thereafter heating said impregnated alumina support in the presence of hydrogen gas while heating up to a maximum hold temperature of from about 250° to about 400° C. for a hold time of 6 to about 65 hours, to produce a reaction effluent comprising straight chain hydrocarbons boiling in the diesel fuel boiling range and in the C_5–C_9 range, separating a stream comprising said straight chain paraffins in the C_5–C_9 range from the reaction effluent and subjecting said separated stream to dehydrocyclization in the presence of hydrogen and a dehydrocyclization catalyst in a dehydrocyclization conversion zone to produce a high octane gasoline product.

4,605,681

THERMOSETTING POLYURETHANES

Peter J. Grey, and Kevin Gardner, both of Burton on Trent, United Kingdom, assignors to BTR plc., London, United Kingdom

Filed Jun. 24, 1985, Ser. No. 747,831

Claims priority, application United Kingdom, Jun. 26, 1984, 8416320

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—51 15 Claims

1. A thermoset polyurethane material which exhibits high, temperature-insensitive damping over a broad temperature range and has a tan δ (as hereinbefore defined) greater than 0.1 over the temperature range of from −40° C. to 60° C., a hardness in the range of from 0 to 90 Shore A, a compression set (as hereinbefore defined) of less than 15% and a tensile strength (as hereinbefore defined), of less than 30 kg/cm^2, the polyurethane material being prepared by the reaction of

(a) an essentially primary hydroxyl tipped polyol having a molecular weight in the range of from 2,500 to 8,000;

(b) a polyhydric alcohol;

(c) an aliphatic monohydric primary alcohol containing up to 10 carbon atoms; and

(d) a polyisocyanate, the reaction being carried out at a isocyanate index of 1.0 or greater.

4,605,682

LIGHTLY CROSSLINKED POLYETHYLENE POLYSTYRENE BLEND FOAMS AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1985, Ser. No. 697,653

Int. Cl.[4] C08J *9/14*

U.S. Cl. 521—81 4 Claims

1. A process for preparing a lightly crosslinked polymer foam material comprising the steps of:

(a) melt processing under pressure from about 95 to 50% by weight of a low density ethylene polymer and from about 5 to 50% by weight of a styrene polymer together with a volatile blowing agent and a sufficient amount of a free radical generating compound as a crosslinking agent, to form a flowable admixture; and

(b) extruding said admixture through a die to a zone of lower pressure and activating said blowing agent to expand said admixture of polymers to a cellular structure crosslinked with itself to form a lightly crosslinked polymer foam material.

4,605,683

POLYMERIC BUNS AND METHOD AND APPARATUS FOR ITS MANUFACTURE

Edwin Broslaw, Hackensack, N.J., assignor to Crest-Foam Corporation, Moonachie, N.J.

Filed Aug. 6, 1984, Ser. No. 637,907

Int. Cl.[4] C08G *18/14*; B29C *39/16, 39/42, 67/22*

U.S. Cl. 521—99 39 Claims

1. A method of manufacturing a flattopped polymeric bun comprising the steps of

forming a support surface into a trough,

dispensing liquid polymer which expands on reaction onto said support surface,

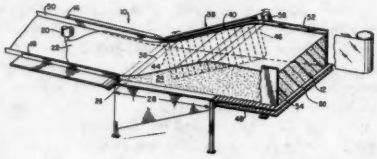
inclining said support surface to cause flow of said polymer to an expansion region in which said polymer expands,

introducing said polymer onto a supporting liquid which supports said polymer in a zone which is substantially coextensive with at least a major portion of said expansion region, said supporting liquid having a specific gravity

higher than that of said polymer, whereby said polymer floats on and advances across said supporting liquid in the form of an expanding mass having left and right sides, a flat bottom and a top which slopes upwardly in the direction of advance,

bringing conveying means into supporting relation to said expanding mass at said respective left and right sides of said expanding mass, said conveying means having polymer-supporting active surfaces which respectively lie in substantially vertical planes extending in the direction of advance,

interposing a protective film between said polymer and each of said polymer-supporting active surfaces,



advancing said polymer-supporting active surfaces of said conveying means to move along with said expanding mass with respect to said supporting liquid, the interposed protective films being thereby advanced therewith, and

orienting said conveying means so that the direction of advance of said polymer-supporting active surfaces is substantially parallel to said sloping top, the lower ends of said conveying means being submerged in said supporting liquid and being usptream of the higher ends thereof,

whereby upon completion of said expansion, a polymeric bun is formed having bottom, left, right, and top surfaces that are substantially flat.

11. A polymeric bun made by the method of claim 1.

4,605,684

ANTISTATIC POLYURETHANE FOAM

Michael P. Pcolinsky, Jr., 1009 Meade Ct., Hazleton, Pa. 18201

Filed Oct. 31, 1985, Ser. No. 793,163

Int. Cl.[4] C08J *9/00*

U.S. Cl. 521—107 9 Claims

1. In the method of preparing a flexible polyurethane foam from a polyol and a polyisocyanate the improvement which comprises adding to the foam-forming composition from about five to about 25 parts by weight per 100 parts by weight of polyol of an antistatic additive composition comprising one part by weight of a quaternary ammonium compound selected from the group consisting of soya dimethyl ethyl ammonium ethylsulfate, soya dimethyl ethyl ammonium ethylphosphate, and mixtures thereof and from about 0.4 to about 3 parts by weight of a plasticizer composition selected from the group consisting of N-ethyl-o- and p-toluene sulfonamide, o- and p-toluene sulfonamide, tetrakis (2 chloroethyl) ethylene diphosphate, and mixtures thereof, to provide a foam having a reduced tendency to develop and accumulate electrostatic charges.

4,605,685

METHOD FOR PREPARATION OF GRAFT POLYMERIC MEMBRANES

Takashi Momose, Urbana, Ill.; Kazuo Tomiie, Tokyo, Japan; Hiroyuki Harada, Yokohama, Japan; Hiroshi Miyachi, Okayama, Japan, and Hiroko Kato, Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 648,018

Claims priority, application Japan, Sep. 6, 1983, 58-162512; Nov. 22, 1983, 58-218679; Dec. 13, 1983, 58-233680; Mar. 19, 1984, 59-51096

Int. Cl.[4] C25B *13/00;* C29C *7/04*

U.S. Cl. 522—124 13 Claims

1. A method for the preparation of a graft polymer membrane comprising an inactive polymer film selected from the group consisting of polyethylene film, polytetrafluoroethylene film, polychoroethylene film, polyvinylidene fluoride film, polyvinyl fluoride film, tetrafluoroethylene-hexafluoropropylene copoplymer film, tetrafluoroethyleneethylene copolymer film, tetrafluoroethylene propylene copolymer film, tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer film, chlorotrifluoroethylene-ethylene copolymer film, and chlorotrifluoroethylene-propylene copolymer film having α,B,B-trifluorostyrene as a graft chain; comprising the steps of:

irradating the inactive polymer film alone with ionizing radiation at a dose of 1–30 Mrad to produce radicals; and graft-polymerizing the resulting irradiated film by contacting said film with α,B,B-trifluorostyrene at a temperature within the range of 10°–90° C. for a time of 1–50 hrs., said graft polymerization being carried out while said radicals retain their life and, in the case of holding the films, by a time not greater than about two weeks from irradiation depending on holding temperature.

4,605,686

LATEX FOR IMMUNOSEROLOGICAL TESTS AND A METHOD FOR THE PRODUCTION OF THE SAME

Satoshi Obana, Osaka, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1985, Ser. No. 710,234

Claims priority, application Japan, Mar. 13, 1984, 59-48447; Mar. 13, 1984, 59-48448; May 4, 1984, 59-89897; Jun. 5, 1984, 59-115785

Int. Cl.[4] C08L *41/00;* G01N *1/00*

U.S. Cl. 523—105 20 Claims

1. A latex for immunoserological tests containing polystyrene and/or polystyrene derivative particles which are prepared by polymerizing styrene or copolymerizing styrene and styrenesulfonates in the absence of emulsifying agents to form a suspension of polymer particles, and chlorinating said suspension to form particles having uniform diameters and a specific gravity ranging from 1.10 to 1.60.

4,605,687

MULTILAYER AUTOMOTIVE PAINT SYSTEM

Sol Panush, Farmington Hills, Mich., assignor to Inmont Corporation, Clifton, N.J.

Continuation of Ser. No. 631,041, Jul. 16, 1984, abandoned, which is a division of Ser. No. 526,724, Aug. 26, 1983, Pat. No. 4,499,143. This application Dec. 16, 1985, Ser. No. 808,675

Int. Cl.[4] C09D *5/29;* B32B *19/02;* C09C *1/62;* C08K *9/10*

U.S. Cl. 523—171 1 Claim

1. A transparent coating composition particularly adapted for use in automotive coatings consisting essentially of thermoplastic or thermosetting resin containing iron oxide encapsulated mica particles in a particle to weight ratio of about 0.0001 to about 0.32, the iron oxide encapsulation additionally containing about 1% to about 35% titanium dioxide and about 0.1% to about 3.5% chromium hydroxide, based on total weight of the particle, the mica particles being about 5 microns to about 60 microns nominal longitudinal dimension and having a thickness of about 0.25 micron to about 1 micron, the iron

oxide encapsulation representing about 10% to about 85% by weight of the total weight of the particle, the composition when used as a transparent topcoat portion of a multicoat coating system producing metallic color effects and stability to the elements.

4,605,688

METHOD FOR MAKING SYNTACTIC FOAM WITH IMPROVED PROCESSING CHARACTERISTICS USING A SILANE COUPLING AGENT IN COMBINATION WITH AN AMINATED ALKYLPHENOL ALKOXYLATE

Kathy B. Sellstrom, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1985, Ser. No. 808,694
Int. Cl.[4] C08J 9/32
U.S. Cl. 523—218 5 Claims

1. In a method for making syntactic foams with improved processibility and lower cure times, including combining a vicinal ployepoxide having an epoxy equivalency of greater than 1.8, a hollow granular filler and a curing amount of a curing agent for the polyepoxide, the improvement which comprises:

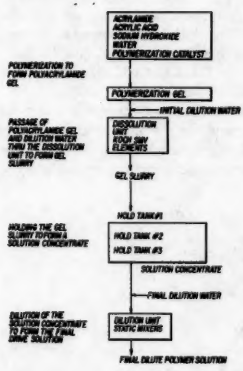
combining with the above ingredients an effective amount of an aminated alkylphenol alkoxylate and an effective amount of an aminosilane coupling agent. An alkylphenol alkoxylate and a silane coupling agent.

4,605,689

PREPARATION OF AQUEOUS POLYACRYLAMIDE SOLUTIONS FOR ENHANCED OIL RECOVERY

John M. Witheford, Wyckoff, N.J.; Joseph J. Pellon, New Canaan, and William P. Colman, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 28, 1984, Ser. No. 675,491
Int. Cl.[4] C08K 5/20
U.S. Cl. 523—313 11 Claims


ACRYLAMIDE
ACRYLIC ACID
SODIUM HYDROXIDE
WATER
POLYMERIZATION CATALYST
POLYMERIZATION TO FORM POLYACRYLAMIDE GEL
POLYMERIZATION GEL
INITIAL DILUTION WATER
PASSAGE OF POLYACRYLAMIDE GEL AND DILUTION WATER THRU THE DISSOLUTION UNIT TO FORM GEL SLURRY
DISSOLUTION UNIT KOCH SMV ELEMENTS
GEL SLURRY
HOLD TANK #1
HOLDING THE GEL SLURRY TO FORM A SOLUTION CONCENTRATE
HOLD TANK #2
HOLD TANK #3
SOLUTION CONCENTRATE
FINAL DILUTION WATER
DILUTION OF THE SOLUTION CONCENTRATE TO FORM THE FINAL DILUTE SOLUTION
DILUTION UNIT STATIC MIXERS
FINAL DILUTE POLYMER SOLUTION

1. A process for producing a dilute polyacrylamide solution comprising:

(a) providing a polyacrylamide gel of from about 6 to about 15% polymer solids and having a solution viscosity of from about 3 to about 10 cps, as measured on a 0.1% polymer solution in 1N NaCl in a Brookfield viscometer equipped with UL adaptor at 60 rpm and at 25° C.;

(b) conveying the polyacrylamide gel and a minor amount of aqueous media through at least one static cutting device to provide a substantially non-degraded, concentrated aqueous slurry of finely divided gel particles;

(c) dissolving and homogenizing said concentrated gel slurry in said aqueous media to provide a homogeneous solution concentrate; and

(d) thereafter, diluting said solution concentrate with aqueous media until a dilute polyacrylamide solution of desired polymer solids content is obtained.

4,605,690

LOW VOLATILE ORGANIC CONTENT CATHODIC ELECTRODEPOSITION BATHS

Tapan K. Debroy, Novi, Mich.; Dave W. Braun, Toledo, Ohio, and Ding-Yu Chung, Farmington Hills, Mich., assignors to Inmont Corporation, Clifton, N.J.

Filed Apr. 15, 1985, Ser. No. 723,589
Int. Cl.[4] C09D 5/46, 3/58
U.S. Cl. 523—414 6 Claims

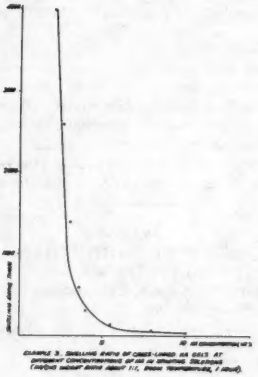
1. In a cathodic electrodepositable resin composition comprising an epoxy resin/amine adduct, wherein the epoxy/amine-adduct is mixed with a primary crosslinking agent and salted to form a principle emulsion, the improvement comprising the inclusion of an additional crosslinking agent having Tg below ambient temperature as a reactive diluent in the principle emulsion, thereby producing a principle emulsion which, when incorporated into a coating bath, produces smooth electrodeposited films, thereby eliminating or substantially reducing the need for volatile organic coalescent solvents.

4,605,691

CROSS-LINKED GELS OF HYALURONIC ACID AND PRODUCTS CONTAINING SUCH GELS

Endre A. Balazs, Riverdale, N.Y., and Adolf Leshchiner, Fairview, N.J., assignors to Biomatrix, Inc., Ridgefield, N.J.

Division of Ser. No. 678,895, Dec. 6, 1984, abandoned. This application Jul. 18, 1985, Ser. No. 755,976
Int. Cl.[4] C08B 37/08
U.S. Cl. 524—27 6 Claims



1. A method of preparing a cross-linked gel of hyaluronic acid comprising subjecting sodium hyaluronate in a dilute aqueous alkaline solution at a pH of not less than about 9 to a cross-linking reaction with divinyl sulfone at about 20° C.

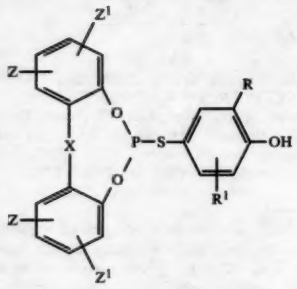
4,605,692

SUBSTITUTED DIBENZO DIOXAPHOSPHEPINS AND DIOXAPHOSPHOCINS AS STABILIZERS

John D. Spivack, Spring Valley, and Ramanathan Ravichandran, Yonkers, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,648
Int. Cl.[4] C07F 9/15
U.S. Cl. 524—117 13 Claims

1. A compound of the formula



wherein

R and R^1 independently are hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms;

Z and Z^1 independently are hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 18 carbon atoms; and

X is a direct bond, sulfur or alkylidene of 1 to 12 carbon atoms.

4,605,693

RUBBER-METAL ADHESION PROMOTERS

Syed K. Mowdood, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 584,180, Feb. 27, 1984, Pat. No. 4,521,558. This application Jan. 24, 1985, Ser. No. 694,380

Int. Cl.[4] C08K *5/17*

U.S. Cl. 524—239 **13 Claims**

1. A composite comprising a rubber composition with a metal reinforcing element embedded therein, wherein said rubber composition contains from about 0.05 to about 10 parts per hundred parts of rubber by weight of at least one adhesion promoter selected from the group consisting of iminodiacetic acids, N-substituted iminodiacetic acids, salts of N-substituted iminodiacetic acids, and salts of iminodiacetic acids.

4,605,694

PLASTICIZING COMPOSITIONS FOR POLYVINYLCHLORIDE

John F. Walker, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 31, 1985, Ser. No. 793,508

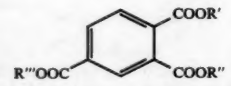
Int. Cl.[4] C08K *5/12*

U.S. Cl. 524—292 **5 Claims**

1. A composition comprising:

(a) polyvinylchloride;

(b) at least one trimellitate ester having the structural formula



wherein R', R", and R"' are independently branched or straight chain alkyls having about 6 to about 10 carbon atoms; and

(c) at least one pentaerythritol alkanoic acid ester, wherein the alkanoic acid is n-heptanoic acid or a mixture of straight chain C_5–C_{10} monocarboxylic alkanoic acids having an average carbon chain length of 6.5 to 7.5 and having less than about 15% by weight C_5 and C_{10} monocarboxylic alkanoic acids.

4,605,695

HEAT- AND ABRASION-RESISTANT COATING MATERIAL

Hiroshi Sakamaki, Utsunomiya; Yukio Horikoshi, Kazo, and Kikuji Yanagihashi, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

PCT No. PCT/JP84/00058, § 371 Date Oct. 17, 1984, § 102(e) Date Oct. 17, 1984, PCT Pub. No. WO84/03291, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 21, 1984, Ser. No. 666,239

Claims priority, application Japan, Feb. 24, 1983, 58-28488

Int. Cl.[4] C08K *3/04, 3/14, 3/20;* C08L *27/18*

U.S. Cl. 524—424 **1 Claim**

1. A heat- and abrasion-resistant coating material comprising a finely powdered resin mixture of 70 to 90 weight % of finely powdered tetrafluoroethylenehexafluoropropylene copolymer resin and 10 to 30 weight % of finely powdered polyimide resin containing 5 to 15 weight %, based on the total weight, of at least one inorganic member selected from the group consisting of ZrO_2, SiC, Si_3N_4, Al_2O_3, and C having a particle size of 0.2 to 1.0 micron meter, said material being adapted to be applied, as a supension, onto sliding members, and baked to form a coating thereon.

4,605,696

ENHANCED ADHESION OF RUBBER TO REINFORCING MATERIALS THROUGH THE USE OF PHENOLIC ESTERS

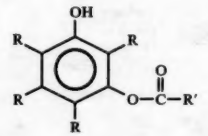
David A. Benko, Munroe Falls; Syed K. Mowdood, Akron; Paul H. Sandstrom, Tallmadge; Walter H. Waddell, III, Akron, and Lawson G. Wideman, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1985, Ser. No. 781,081

Int. Cl.[4] C08L *61/12*

U.S. Cl. 524—432 **19 Claims**

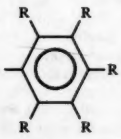
1. A vulcanizable rubber composition comprising rubber, a vulcanizing agent and the reaction product of (A) a methylene donor and (B) a methylene acceptor selected from at least one compound of the general structural formula (I):



(I)

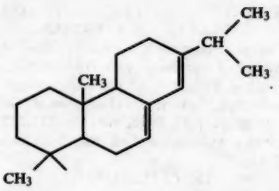
wherein R may be the same or different radicals selected from the group consisting of hydrogen, halogen, alkyl of 1 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms, and hydroxyl:

wherein R' is an aromatic radical the structural formula:



wherein R is defined as above;

or a radical of the structural formula:



4,605,697

SUBSTITUTED SULFONAMIDO COMPOUNDS, PHOTOSENSITIVE ELEMENTS, FILM UNITS, AND PROCESSES FOR RETAINING A PHOTOGRAPHIC IMAGE WITH SAME

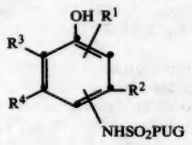
Claude F. Gerbal, Bonneuil-sur-Marne, France; Thomas E. Gompf, Rochester, N.Y., and Pierre D. Collet, Nogent-sur-Marne, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 150,037, May 15, 1980, abandoned, which is a division of Ser. No. 3,972, Apr. 24, 1979, Pat. No. 4,258,120. This application Sep. 16, 1983, Ser. No. 533,075

Int. Cl.[4] C09B *43/00, 43/12, 43/124, 43/132*

U.S. Cl. 534—648 5 Claims

1. A nondiffusible sulfonamidonaphthol compound which is alkali-cleavable upon oxidation to release a diffusible photographically useful material, said nondiffusible sulfonamidonaphthol compound having the formula:



wherein:

(a) R^1 is alkyl, aryl, sulfamyl, carbamyl, carbonamido, carbonyl, carbonyloxy or sulfonamido;

(b) R^2 is alkyl having from 1 to 18 carbon atoms, aryl, or alkylphenyl having from 7 to 12 carbon atoms;

(c) R^3 and R^4, taken together with the phenol group, form a fused substituted naphthol group;

(d) PUG represents a photographically useful group; and

(e) at least one of R^1, R^2, R^3 or R^4, or any combination thereof, provides a molecular configuration of such size or shape as to render the compound nondiffusible under alkaline processing conditions.

4,605,698

POLYFUNCTIONAL AZIRIDINES FOR USE IN CROSSLINKING APPLICATIONS

Frank C. Briden, Morristown, N.J., assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 513,454, Jul. 13, 1983, Pat. No. 4,563,307. This application Sep. 12, 1985, Ser. No. 775,430

Int. Cl.[4] C08L *33/02*

U.S. Cl. 524—559 11 Claims

1. In a coating composition selected from the group consisting of aqueous and solvent based coating compositions containing crosslinkable carboxylated polymer and at least one polyfunctional aziridine crosslinking agent, the improvement comprising the presence of at least one polyfunctional aziridine crosslinking agent which is the reaction product of (1) ethylene imine and (2) acrylates of alkoxylated polyols selected from the group consisting of trimethylol propane, neopentyl glycol, pentaerythritol, bis phenol A, bis phenol F and glycerol having from about 2 to about 12 moles of at least one alkylene oxide selected from the group consisting of ethylene oxide and propylene oxide.

4,605,699

THERMOPLASTIC MOLDING COMPOSITIONS CONTAINING POLYCARBONATE AND AN ACRYLATE GRAFT COPOLYMER

Konrad Mitulla, Ludwigshafen; Juergen Hambrecht, Heidelberg; Adolf Echte; Johann Swoboda, both of Ludwigshafen; Peter Siebel, Limburgerhof; Josef Schwaab, Maikammer, and Herbert Frank, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 11, 1985, Ser. No. 722,155

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414118

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—67 9 Claims

1. A thermoplastic molding composition consisting essentially of

(A) from 10 to 90 parts by weight of one or more aromatic polycarbonates

and

(B) from 90 to 10 parts by weight of one or more graft copolymers which are composed of

(b_1) one or more elastomers (rubbers) which account for from 10 to 80% by weight, based on (B) and consist of

(b_1a_1) from 50 to 99.9% by weight, based on (b_1), of one or more alkyl acrylates where alkyl is of 1 to 8 carbon atoms,

(b_1a_2) from 0 to 50% by weight, based on (b_1), of one or more copolymerizable unsaturated monomers

and

(b_1a_3) from 0.1 to 5% by weight, based on (b_1), of a copolymerizable polyfunctional crosslinking monomer

and

(b_2) a grafted shell on this elastomer, which shell accounts for from 90 to 20% by weight, based on (B), wherein the grafted shell (b_2) of the copolymer B is produced in three stages and contains, as copolymerized units,

(b_2a_1) from 5 to 40% by weight, based on (b_2), of one or more monoethylenically unsaturated aromatic hydrocarbons of not more than 12 carbon atoms

as graft monomers of the first stage,

(b_2a_2) from 15 to 50% by weight, based on (b_2), of a mixture of one or more monoethylenically unsaturated aromatic hydrocarbons of not more than 12 carbon atoms with one or more ethylenically unsaturated monomers which are copolymerizable with this, in a weight ratio of from 90:10 to 60:40,

as graft monomers of the second stage, and

(b_2a_3) from 10 to 85% by weight, based on (b_2), of an alkyl methacrylate or an alkyl acrylate where alkyl is of 1 to 8 carbon atoms, or a mixture of these,

as graft monomers of the third stage, the graft copolymer formed the elastomer (b_1) and the grafted shell (b_2) having a mean particle size of from 200 to 700 nm (d_{50} value of the integral mass distribution).

4,605,700

THERMODYNAMICALLY MISCIBLE POLYMER COMPOSITION

Bi Le-Khac, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 21, 1985, Ser. No. 789,525

Int. Cl.[4] C08L *51/04, 55/02, 33/24, 25/12*

U.S. Cl. 525—73 16 Claims

1. A polymer composition comprising (A) a copolymer having from about 40 to about 60 mole % of a C_2 to C_4 α-olefin and from about 60 to about 40 mole % of an N-aryl substituted maleimide and (B) a polymer selected from the group consisting of (1) a copolymer matrix of from about 65 to about 85% by weight of a vinyl aromatic monomer selected from the

group consisting of styrene and α-methylstyrene and from about 15 to about 35% by weight acrylonitrile, and (2) a rubber grafted with a copolymer matrix of from about 65 to about 85% by weight of a vinyl aromatic monomer selected from the group consisting of styrene and α-methylstyrene, and from about 15 to about 35% by weight acrylonitrile, said rubber being employed in an amount within the range of from about 1 to about 40 parts per each 100 parts by weight of the total weight of vinyl aromatic monomer plus acrylonitrile wherein the weight ratio of component (A) to the copolymer matrix of component (B) is from 99:1 to 1:99; and wherein component (A) and the copolymer matrix of (B) are thermodynamically miscible with one another such that the polymer composition exhibits a single glass transition temperature value.

4,605,701

SMALL-GLOBULAR CROSSLINKED MONOALLYLAMINE POLYMER AND PROCESS FOR PRODUCING THE SAME

Susumu Harada, Koriyama; Sakuro Hasegawa, Fujisawa, and Koichi Sato, Fukushima, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Oct. 19, 1984, Ser. No. 662,726

Claims priority, application Japan, Oct. 25, 1983, 58-198399

Int. Cl.⁴ C08F *126/02, 271/00*

U.S. Cl. 525—107 **8 Claims**

1. A crosslinked homopolymer of monoallylamine having appendent primary amino groups and a particle size, when dry, of not more than 2 mm, said polymer being swellable but insoluble in water, wherein at least a part of the primary amine group of an uncrosslinked monoallylamine polymer is crosslinked with formaldehyde or a compound having at least two functional groups reactive with said primary amine groups, said crosslinked homopolymer being prepared by crosslinking the polymeric material while in the form of a dispersion in an immiscible liquid.

2. The homopolymer of claim 1 wherein the functional groups are at least one of the groups selected from halogen, aldehyde, epoxy, carboxyl, carboxylic acid anhydride, carboxylic acid halide, sulfonyl halide, N-chloroformyl, chloroformate, imido-ether, amidinyl, isocyanate and vinyl.

4,605,702

TEMPORARY WET STRENGTH RESIN

Gerald J. Guerro, Trumbull; Robert J. Proverb, Danbury, both of Conn., and Robert F. Tarvin, Roswell, Ga., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 27, 1984, Ser. No. 625,339

Int. Cl.⁴ C08F *8/28*

U.S. Cl. 525—154 **6 Claims**

1. A glyoxylated cationic, water-soluble acrylamide polymer containing (a) from about 70–99%, by weight, of an acrylamide and (b) from about 1–30%, by weight, of a cationic monomer or mixture of cationic monomers copolymerizable with said acrylamide, up to about 10%, by weight, of said acrylamide being replaced by (c) a different comonomer than (b) copolymerizable with said acrylamide, the amount of said (c) being less than said (b) if said (c) is anionic, said acrylamide copolymer having a molecular weight ranging from about 500 to about 6000 before glyoxylation, and having sufficient glyoxal-reactive amide substituents and —CH_0HCHO substituents to be thermosetting, the ratio of glyoxol units to acrylamide units ranging from about 0.1–0.5:1.0.

4,605,703

ADHESIVES WITH A HIGH LEVEL OF ADHESION ON PLASTICS MATERIALS

Wolfgang Fischer, Meerbusch; Gerhard Klein, Monheim; Rudoph Hombach, Leverkusen, and Wilfried Kniege, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1985, Ser. No. 737,232

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 3420924

Int. Cl.⁴ C08L *61/32*

U.S. Cl. 525—157 **3 Claims**

1. Two-component adhesives comprising as a first component parts (a) to (e) as follows:

(a) from 5 to 70 parts by weight of polymer

(b) from 20 to 80 parts by weight of reactive diluent with a polymerizable group

(c) from 1 to 20 parts by weight of reactive diluent with several polymerizable groups,

(d) from 5 to 50 parts by weight of polymerizable isocyanate, and

(e) from 1 to 10% by weight of peroxidic compound, based on the sum of the parts of (a) to (d)

and as a second component, activators comprising an amine-/aldehyde condensation product.

4,605,704

GRAFT POLYMERS OF POLYMERIZABLE MONOMERS AND OLEFIN POLYMERS

David W. Eastman, Douglassville, Pa., and Leigh E. Walker, Lewiston, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,229

Int. Cl.⁴ C08F *255/02, 255/04, 255/06;* C08L *51/06*

U.S. Cl. 525—193 **9 Claims**

1. A process for preparing a transparent vinyl halide polyolefin graft copolymer which comprises:

(1) mixing a monomer component comprising vinyl halide alone or in combination with up to 50 percent by weight based on the total weight of monomer of an ethylenically unsaturated monomer copolymerizable therewith, in the liquid state, with an initiator and a solid polyolefin comprising a polymer of an aliphatic hydrocarbon monoolefin of 2 to about 8 carbon atoms, wherein the polyolefin is substantially insoluble in the monomer or monomers, but absorbs a substantial amount of the monomer or monomers,

(2) heating the resulting mixture at a temperature in the range of about 30 to about 90 degrees Celsius,

(3) mixing additional liquid monomer component with the product of step (2), and

(4) heating the resulting mixture at a temperature in the range of about 30 to about 90 degrees Celsius to produce a vinyl halide polyolefin graft copolymer that is capable of being molded to form a transparent product;

wherein the proportion of polyolefin in the final polymer product is in the range of about 2 to about 20 weight percent based on the weight of vinyl halide.

4,605,705

HEAT RESISTANT SULFUR-MODIFIED POLYCHLOROPRENE COPOLYMERS

Tsuneichi Takeshita, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 10, 1984, Ser. No. 648,594

Int. Cl.⁴ C08F *8/00, 36/18;* C08L *11/02*

U.S. Cl. 525—330.9 **9 Claims**

1. A process for preparing a heat resistant sulfur-modified polychloroprene copolymer containing about 3–25% by weight of units derived from 2,3-dichloro-1,3-butadiene and units derived from 2-chloro-1,3-butadiene wherein about 92–96% by weight of said units have a 1,4-trans configuration,

said polychloroprene having a calculated Mooney viscosity ML 1+4' (100° C.), of from about 25–75 which comprises

(I) emulsion polymerizing a mixture of 2-chloro-1,3-butadiene and 2,3-dichloro-1,3-butadiene to a total conversion of from about 65–85% by weight and at a temperature (T) in the range of from about 273–298K, said 2,3-dichloro-1,3-butadiene being employed in an amount of at least X parts to 20 parts per 100 parts 2-chloro-1,3-butadiene plus 2,3-dichloro-1,3-butadiene wherein

$$X=48.734-0.15325K, \quad (1)$$

said calculated Mooney viscosity of the resulting polychloroprene copolymer within the range of 25–75 being obtained by employing amounts of from 0.1–0.62 parts elemental sulfur (S), up to 1.0 parts diisopropyl xanthogen disulfide (P) or an equivalent amount of another dialkyl xanthogen disulfide, and 2,3-dichloro-1,3-butadiene (A), said (S), (P) and (A) expressed as parts per 100 parts of said 2-chloro-1,3-butadiene plus 2,3-dichloro-1,3-butadiene, at a given temperature of polymerization (T), expressed by the following equation:

$$ML\ 1+4'\ (100°\ C.) = (11129.1)e^{(-3.97385S-2.34837P-.0138807T+.0281227A)}, \quad (2)$$

and

(II) pepitizing the resulting polychloroprene copolymer latex to at least 60% of the theoretical maximum.

4,605,706

PROCESS FOR PRODUCING A CHELATE RESIN

Yushin Katsuka; Masaaki Matsuda; Kenji Ochi, and Masahiro Aoi, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

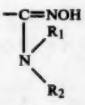
Division of Ser. No. 525,473, Aug. 22, 1983, Pat. No. 4,564,659. This application May 28, 1985, Ser. No. 738,369

Claims priority, application Japan, Sep. 1, 1982, 57-153028

Int. Cl.[4] C08F 8/32

U.S. Cl. 525—340 **3 Claims**

1. A process for preparing a chelate resin having a functional group represented by the formula:



(I)

wherein R_1 and R_2 are each independently a hydrogen atom, an alkyl group, an aminoalkyl group, or a phenyl group and a functional group represented by the formula:

(II)

wherein R_3 is an amino group, an alkylamino group, a polyethylenepolyamino group, a hydrazo group, a hydrazino group, a hydrazono group, an amidino group, a guanidino group, or a semicarbazide group, the equivalent ratio of the functional group of the formula (II) to that of (I), (II)/(I), being 0.1 to 1, which comprises reacting a resin having nitrile groups with hydroxylamine and/or a derivative thereof and an amino compound other than said hydroxylamine and said derivatives thereof.

4,605,707

QUATERNARY POLYALKYLENE IMINE CONTAINING 2-HYDROXYPROPYLTRIMETHYL AMMONIUM SALT PENDENT SIDE CHAIN GROUPS

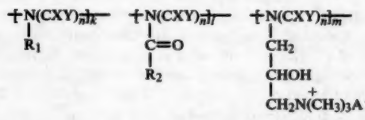
Herbert K. Reimschuessel, and Harry E. Ulmer, both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 25, 1985, Ser. No. 704,849

Int. Cl.[4] C08G 73/00; C08F 8/12

U.S. Cl. 525—410 **8 Claims**

1. A substantially water soluble polyalkylene imine polymer comprising a polyalkyene imine backbone containing 2-hydroxypropyltrimethylammonium salt pendent side chains, said polymer having recurring units of the formula:



where n is an integer of 2 to 12; k, l and m are mole fractions within the ranges of 0 to 0.9, 0 to 0.9 and 0.1 to 1.0, respectively, and wherein R_1 and R_2 are the same or different and are hydrogen or alkyl radicals of 1 to 6 carbon atoms and X and Y are H or an alkyl radicals of 1 to 6 carbon atoms, and A is an anion derived from halide, nitrate, sulfate, alkyl sulfate, or perchlorate.

4,605,708

METHOD FOR PREPARING FLAME RETARDANT THERMOPLASTIC NYLON RESINS AND COMPOSITIONS THEREFOR

Yoav-Bar Yaacov, and Ram Minke, both of Beer-Sheva, Israel, assignors to Makteshim Chemical Works Ltd., Israel

Continuation of Ser. No. 489,561, Apr. 28, 1983, abandoned. This application Sep. 11, 1985, Ser. No. 775,104

Claims priority, application Israel, May 10, 1982, 65726

Int. Cl.[4] C08F 283/04; C08L 63/00

U.S. Cl. 525—423 **10 Claims**

1. A method for preparing a flame retardant thermoplastic nylon compositions comprising incorporating into the thermoplastic nylon a halogenated bisphenol-A epoxy resin having a halogen content of at least 20% and a molecular weight above 8,000 in an amount sufficient to impart flame retardance.

4,605,709

WET STRENGTH RESIN FROM METHYLBIS(AMINOPROPYL)AMINE, OXALIC ACID ESTER, SATURATED ALIPHATIC DIESTER AND EPIHALOHYDRIN

William W. Maslanka, Landenburg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 517,159, Jul. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 488,894, Apr. 27, 1983, abandoned. This application Jan. 8, 1985, Ser. No. 689,739

Int. Cl.[4] C08G 69/48

U.S. Cl. 525—430 **16 Claims**

1. A process for preparing an aqueous solution of a water-soluble, cationic thermosetting resin, which process consists of reacting N-bis (aminopropyl) methylamine with (a) a diester of oxalic acid selected from the group consisting of dimethyl oxalate, diethyl oxalate and dipropyl oxalate and (b) a diester from a saturated aliphatic dicarboxylic acid containing at least 4 carbon atoms and a C_1–C_3 saturated aliphatic monohydric alcohol to form a polyamino-copolyamide containing tertiary amine groups, the mole ratio of (a) to (b) being from about 0.25:1 to about 10:1 and the mole ratio of N-bis (aminopropyl) methylamine to the diesters being from about 0.9:1 to about 1.2:1, and reacting the resulting polyamino-copolyamide in the form of its free amine or a water-soluble acid salt in aqueous

solution with from about 1 mole to about 1.5 moles of an epihalohydrin per mole of tertiary amine groups present in said polyamino-copolyamide.

4,605,710

HIGH TEMPERATURE WIRE COATING POWDER

Curtis R. Guilbert, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 5, 1985, Ser. No. 720,334
Int. Cl.[4] C08L *67/02, 63/06*
U.S. Cl. 525—438 **5 Claims**

1. A powder composition suitable for providing a thermally stable electrically insulative coating on wire when said composition is fused and cured thereon, the composition comprising a blend of a carboxyl-terminated polyester resin derived from at least one aromatic diacid and at least one aliphatic glycol; at least about 5 percent by weight of at least one diimide diacid derived from the reaction product of at least one tricarboxylic acid anhydride and at least one diamine; and at least one triglycidyl isocyanurate, said isocyanurate being present at a mol ratio of epoxide functionality to total acid functionality of from about 0.8 to about 1.5.

4,605,711

MODIFIED POLY(OXAZOLIDONE/URETHANE) COMPOSITIONS

Anthony L. DiSalvo, Greenwich, Conn., and Chung-Chieh Tsai, South Salem, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 499,956, Jun. 1, 1983, Pat. No. 4,504,633.
This application Oct. 29, 1984, Ser. No. 665,676
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.[4] C08F *283/00;* **C08L** *63/00*
U.S. Cl. 525—438 **5 Claims**

1. A thermoset composition containing oxazolidone and urethane linkages in its recurring unit which is essentially free of isocyanurate linkages, said oxazolidone linkages being present in the polymer backbone and separated from one another by ester linkages, said urethane linkages being present in side chains attached to the polymer backbone, the composition being modified by having grafted to the polymer backbone a polymeric moiety derived from polymerizing an ethylenically unsaturated monomer.

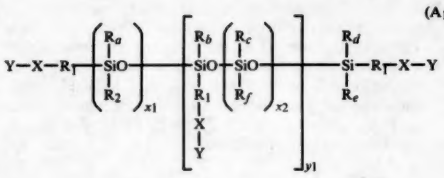
4,605,712

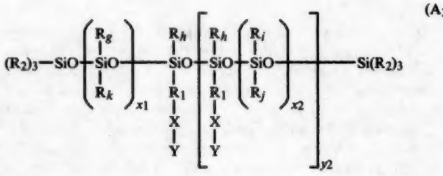
UNSATURATED POLYSILOXANES AND POLYMERS THEREOF

Karl F. Mueller, New York, N.Y.; Dieter Lohmann, Muenchenstein, Switzerland, and Robert A. Falk, New City, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 24, 1984, Ser. No. 653,416
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—474 **40 Claims**

1. A linear or branched polysiloxane macromer having a molecular weight from about 400 to 100,000, as measured by end group analysis or gel permeation chromatography, said macromer containing at least one terminal or pendant, polymerizable olefinic group per each 5000 molecular weight unit of polysiloxane, said group being attached to the polysiloxane through one urethane, thiourethane or urea linkage, said macromer having the structure A_1, A_2, A_3 or A_4





$$Y_1—(T—R_4)_n—T—Y_1, \quad (A_3)$$

or

$$Y_1—(T_1—R_4)_n—T_1—Y_1, \quad (A_4)$$

wherein:

R_1 is a linear or branched alkylene group with 2–6 carbon atoms or a polyoxyalkylene group of structure G or G_1

$$—[CH_2CHO]_pCH_2CH— \quad (G)$$
$$\quad\quad R_3 \quad\quad R_3$$

$$—[CH_2CH_2CH_2CH_2O]_pCH_2CH_2CH_2CH_2— \quad (G_1)$$

wherein R_3 is hydrogen or methyl and p is an integer from 1–50, R_2, R_a, R_b, R_c, R_d, R_e, R_f, R_g, R_h, R_i, R_j and R_k are independently methyl or phenyl, x_1, x_2 are integers from 1 to 500 with the proviso that the sum of x_1+x_2 is 7 to 1300, y_1 is 0 to 14 and y_2 is 1 to 13 with the proviso that the ratio of

$$\frac{x_1+x_2}{y_1+2} \text{ or } \frac{x_1+x_2}{y_2+1}$$

is not greater than 70,

X is $—Z_1—CO—NH—$

Z_1 is oxygen, sulfur or NR_5, wherein R_5 is hydrogen or lower (C_1–C_4) alkyl, Z_1 is connected to R_1;

Y_1 is

$$—R_8—Z_2CO—C(R_3)=CH(R_6) \text{ or } —O—R_7—O—CH_2=CH_2$$

wherein:

R_6 is: hydrogen, methyl, $—COOR_5$ or $—COOR_7OH$,

Z_2=oxygen or $—NR_5—$

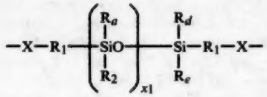
Y is the same as Y_1, or Y may also be H, alkyl of 1 to 8 carbon atoms, cyclohexyl, phenyl, o-tolyl, m-tolyl or p-tolyl, with the proviso that at least one of Y must have the same meaning as Y_1,

R_7 is a linear or branched alkylene of 2 to 10 carbon atoms, phenylene or phenylalkylene with 2 to 10 carbon atoms in the alkylene, or polyoxyalkylene of structure G or G_1;

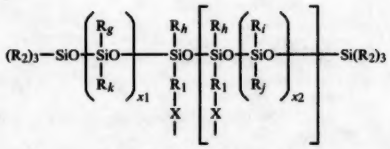
R_8 is an alkylene group of from 2 to 6 carbon atoms,

R_4 is a diradical obtained by removing the NCO-groups from an aliphatic, cycloaliphatic, araliphatic or aromatic diisocyanate;

T is the group



T_1 is the group



n is 0 to 10.

4,605,713

PROCESS FOR THE PRODUCTION OF POLYARYLENE SULPHIDES WITH FUNCTIONAL END GROUPS

Walter Heitz, Kirchhain, and Wolfgang Koch, Mittenaar, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,143

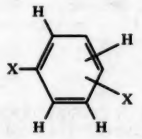
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 3421610

Int. Cl.[4] C08F *283/00*

U.S. Cl. 525—537 **3 Claims**

1. Process for the production of polyarylene sulphides with functional end groups wherein

(a) from 50 to 100 mol % of dihalogen aromatic substances correspond to the formula (I)



(I)

and from 0 to 50 mol % of dihalogen aromatic substances corresponding to the formula (II)

(II)

in which

X represents halogen in the meta or para position relative to each other,

R^1 is the same or different and each represents hydrogen, C_1–C_4-alkyl, C_5–C_{10}-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{14}-alkylaryl C_7–C_{14}-arylalkyl, wherein two radicals R^1 in the ortho position relative to each other are bound to an aromatic or heterocyclic ring containing up to 10 ring atoms, wherein up to 3 ring carbon atoms are replaced by hetero atoms and one radical —R^1 is always different from hydrogen,

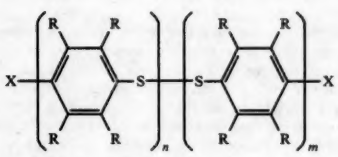
is reacted at 140° to 280° C. with

(b) alkali metal sulphide, the molar ratio of a:b lying in the range of from 1:1 to 1:3,

(c) organic solvent, the molar ratio of alkali sulphide (b) to the organic solvent (c) lying in the range of from 1:2 to 1:20,

(d) water in the form of water of hydration or free water, the molar ratio of b:d lying in the range of from 1:0 to 1:9, and

(e) a dihalogenated aromatic disulphide corresponding to formula (III)



(III)

in which

X represents halogen,

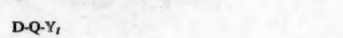
R represents hydrogen, a C_1–C_4-alkyl radical, a C_5–C_{10}-cycloalkyl radical, a C_7–C_{14}-aryl radical and the total number of carbon atoms in each aromatic substance is from 6 to 30, with the proviso that —R is hydrogen in at least 50 mol % of the disulphide used,

n and m are integers of from 1 to 5,

wherein the molar ratio of the disulphide to the p-dihalogen benzene corresponding to formulae (i) and (II) is in the range of 0.01:1 to 1.0:1,

whereby an intermediate polymer is produced and then reacting the intermediate polymer with a reducing agent in the presence of

(f) a compound which is monofunctional under the reaction conditions and which comprises a compound corresponding to the formula (IV)



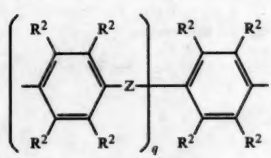
(IV)

wherein

D represents chlorine, bromine or a vinyl group

Y represents hydrogen, —O—CH=CH_2, —S—CH=CH_2, —OH, —OR^2, —SR^2, —NR^2, —NO_2, —CN, —$COOR^2$, or CHO,

Q represents an alkylene radical or a cycloalkylene radical containing from 1 to 10 carbon atoms, an arylene radical containing from 6 to 10 carbon atoms, or an arylene radical corresponding to formula (V)



(V)

t is 1 or 2 when Q is arylene containing 6 to 10 carbon atoms and is otherwise 1,

Z represents CH_2, $C(CH_3)_2$, sulphur or oxygen,

r^2 represents hydrogen, an alkyl radical, a cycloalkyl radical, an aryl radical or a mixture thereof, and p1 q represents the number 0 to 1.

4,605,714
CATALYST, PRODUCTION AND USE

Maurice G. Baker, Cleveland, England, assignor to Imperial Chemical Industries, PLC, Welwyn Garden City, England

Division of Ser. No. 573,344, Jan. 24, 1984, Pat. No. 4,548,916.
This application Sep. 12, 1985, Ser. No. 775,297
Claims priority, application United Kingdom, Feb. 2, 1983, 8302885
Int. Cl.[4] C08F *4/62, 4/64, 4/68*
U.S. Cl. 526—125 **13 Claims**

1. A process for the production of a polymer or copolymer of an unsaturated monomer wherein at least one ethylenically unsaturated hydrocarbon monomer is contacted under polymerisation conditions with a polymerisation catalyst which is the product obtained by mixing together;

(1) a solid material which is a mixture of (a) a solid composition containing at least one transition metal of Groups IVA, VA or VIA of the Periodic Table and (b) finely divided talc and/or a salt of aluminium or of a metal of Group IA or IIA of the Periodic Table and a carboxylic acid containing an aromatic group, wherein components (a) and (b) are present in the solid material in the relative proportions by weight of from 20:1 to 1:10; and

(2) an organic compound of aluminium or of a metal of Group IIA of the Periodic Table or a complex of an organic compound of a metal of Group IA or Group IIA of the Periodic Table together with an organic compound of aluminium.

2. The process of claim 1 wherein component 1(a) is titanium trichloride which also includes aluminium halides or is titanium tetrachloride supported on magnesium chloride.

4,605,715
PROCESS FOR POLYMERIZING OLEFINS IN THE PRESENCE OF A CATALYST PREPARED FROM ORGANOMAGNESIUM COMPOUND, EPIHALOHYDRIN REDUCING HALIDE SOURCE AND TRANSITION METAL COMPOUND

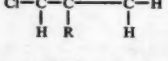
Gary K. Lund, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 20, 1982, Ser. No. 420,442
Int. Cl.[4] C08F *4/02, 10/00*
U.S. Cl. 526—143 **8 Claims**

1. In the process for the polymerization of one or more polymerizable ethylenically unsaturated monomers containing one or more polymerizable α-olefins under Ziegler polymerization conditions wherein the polymerization is conducted in the presence of a transition metal-containing catalyst; the improvement which comprises employing as the transition metal-containing catalyst a catalytic product resulting from admixing in an inert hydrocarbon diluent and in an atmosphere which excludes moisture and oxygen

(A) at least one hydrocarbon soluble organomagnesium material represented by the formula $R_2Mg.xMeR'_{x'}$ wherein each R is indenpendently a hydrocarbyl group having from 1 to about 20 carbon atoms; each R' is independently a hydrogen, hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms; Me is Al, Zn or B; x has a value from zero to 10 and is sufficient to render the organomagnesium component hydrocarbon soluble; and x' has a value equal to the valence of Me;

(b) at least one epihalohydrin represented by the formula



wherein R is hydrogen or an alkyl group having from 1 to about 10 carbon atoms;

(c) at least one reducing halide source represented by the formula $Al(R^3)_{3-m}X_m$ and $B(R^3)_{3-m}X_m$ including mixtures thereof wherein each R^3 is independently hydrogen or a hydrocarbyl group as above defined, and m has a value from 1 to 2; and

(D) at least one transition metal (TM) compound represented by the formula TmY_nX_{z-n}, wherein Tm is a transition metal in its highest stable valence state and being selected from groups IV-B, V-B and VI-B of the Periodic Table of the Elements; Y is oxygen, OR'' or NR_2''; R'' is hydrogen or hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen, preferably chlorine or bromine; z has a value corresponding to the valence of the transition metal, Tm; n has a value of from zero to 5 with the value of z−n being from zero up to a value equal to the valence state of the transition metal, Tm; and wherein

(1) the components are added in the order (A), (B), (C) and (D) or (A), (B), (D) and (C);

(2) the components are employed in quantities so as to provide the following atomic ratios Mg:Tm of from about 0.1:1 to about 100:1;

Cl (from Component C):Mg of from about 2:1 to about 20:1; and

the epoxide:total number of hydrocarbyl groups attached to a metal atom in component (A) is from about 0.5:1 to about 2:1; and

(3) the proviso that when the halide (form Component C):Mg atomic ratio is less than about 3:1 then the resultant mixture is heated at a temperature of from about 35° C. up to the boiling point of the inert hydrocarbon diluent, for a time to permit substantial reaction of the resultant mixture as indicated by a change in color of the mixture.

4,605,716
LEWIS BASE-CATALYZED POLYMERIZATION

Walter R. Hertler, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 14, 1985, Ser. No. 701,681
Int. Cl.[4] C08F *4/16*
U.S. Cl. 526—190 **12 Claims**

1. Polymerization process comprising contacting under polymerizing conditions at least one polar monomer with (i) a tetracoordinate organosilicon, organotin or organogermanium polymerization initiator having at least one initiating site, and (ii) a co-catalyst which is a suitable Lewis base, to produce polymer having repeat units of the monomer.

4,605,717
PREPARATION OF ACRYLIC POLYMER SHEETS USING A TERNARY PEROXIDE INITIATOR SYSTEM

Barry J. Heitner, Bartlett, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 21, 1985, Ser. No. 747,416
Int. Cl.[4] C08F *4/38, 20/14*
U.S. Cl. 526—228 **8 Claims**

1. In a process for preparing acrylic polymer sheet, said polymer selected from the group consisting of methyl methacrylate homopolymer, copolymers of methyl methacrylate with α,β-ethylenically unsaturated compounds and mixtures thereof, which process comprises polymerizing a syrup having a viscosity of 0.5–100 poises at 25° C. and containing about 10–40% by weight of methyl methacrylate homopolymer, copolymer of methyl methacrylate with α,β-ethylenically unsaturated compounds, said copolymer comprising a major portion of methyl methacrylate or mixtures thereof in monomeric methyl methacrylate in the presence of initiator, the improvement wherein the initiator comprises

(a) about from 0.3 to 16 moles per one million grams of syrup of a first peroxide initiator which has a half-life at 85° C. of about from 2 to 6 minutes and which emits a maximum of 1 mole of carbon dioxide per 2 moles of free radical generated;

(b) about from 0.3 to 16.0 moles per one million grams of syrup of a second peroxide initiator which has a half-life at 85° C. of about from 10 to 25 minutes and which emits a

maximum of 2 moles of carbon dioxide per 2 moles of free radicals generated; and

(c) about from 0.1 to 6.0 moles per one million grams of syrup of a third peroxide initiator which has a half-life at 110° C. of about from 1.0 to 3.5 minutes and which emits a maximum of one mole of carbon dioxide for each mole of free radical generated;

the process further comprising first heating the mixture of the syrup and the initiator solution to a temperature of about from 45° to 90° C. for about from 10 to 100 minutes wherein about 90% polymerization occurs, and subsequently heating the mixture to a temperature of about from 110° C. to 140° C. wherein at least about 97.5% polymerization occurs.

4,605,718

POLYALDEHYDE/POLYACETAL COMPOSITIONS

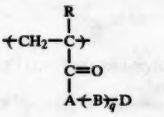
Roger H. Jansma, Park Forest, and Karen R. Sandberg, West Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 625,421, Jun. 28, 1984, Pat. No. 4,508,594. This application Dec. 24, 1984, Ser. No. 685,428

Int. Cl.[4] C08F *20/34, 20/60*

U.S. Cl. 526—240 8 Claims

1. A water-soluble polymer which contains at least two mole percent of a monomer unit represented by the chemical structure:

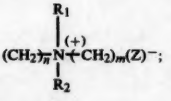


wherein

R is H, CH_3, or C_2H_5; and

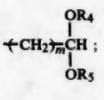
A is O, or $N(R_1)$; and

B is CH_2, CH_2CH_2O,



and

D is



and wherein R_1 is H, CH_3, C_2H_5, $(CH_2CH_2O)_nH$, or $(B)_qD$, and wherein q is from 1–6, except when B contains nitrogen in which case q is always one; and wherein R_2 is H, CH_3, C_2H_5, or $(CH_2CH_2O)_nH$; and wherein R_4 and R_5 may be the same or different and are, for each individual occurrence, H, CH_3, or C_2H_5; and wherein Z is from the group Cl, Br, I, NO_3, or SO_4; and wherein m ranges from 0–6; and wherein n is from 1–6.

4,605,719

LIQUID, CURABLE COATING COMPOSITION BASED ON A HYDROXYL GROUPS-CONTAINING ADDITION POLYMER AS BINDER

Frank C. Peelen, Hoogerheide, Netherlands, assignor to Akzo NV, Arnhem, Netherlands

Filed Aug. 5, 1985, Ser. No. 762,421

Claims priority, application Netherlands, Aug. 17, 1984, 8402531

Int. Cl.[4] C08F *20/18*

U.S. Cl. 526—282 9 Claims

1. A liquid, curable coating composition comprising a hydroxyl groups-containing addition polymer as binder and a curing agent, wherein the addition polymer is a polymer which is partly built up from one or more polycyclic monomers selected from the group consisting of isobornyl acrylate, isobornyl methacrylate, monoalkenically unsaturated compounds of decahydronaphthalene and/or tricyclo(5.2.1.$0^{2,6}$)decane, and their substituted derivatives carrying one or more functional groups, said addition polymer having a number average molecular weight of 600–15,000 and a hydroxyl number of 30–320.

4,605,720

PREPARATION OF NONAQUEOUS DISPERSIONS WITH THE USE OF MONOFUNCTIONAL STABILIZER

Mohinder S. Chattha, Livonia, and Joseph C. Cassatta, Taylor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 23, 1983, Ser. No. 468,901

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.[4] C08L *51/08, 51/06, 51/00;* C08J *3/02*

U.S. Cl. 524—504 11 Claims

1. A stable dispersion containing crosslinked polymer particles characterized in that they are formed by reactions comprising addition polymerization of:

(a) between about 0.5 and about 20 weight percent each of a first and second monomer selected from (i) first and second ethylenically unsaturated monomers each bearing functionality capable of crosslinking reaction with the other or (ii) first and second monomers, wherein said first monomer bears ethylenic unsaturation and functionality capable of crosslinking reaction with other functionality present on said second monomer, said second monomer bearing at least two functional groups of said other functionality and bearing no ethylenic unsaturation; and

(b) between about 99 and about 60 weight percent of at least one other monoethylenically unsaturated monomer,

in the presence of (I) an organic liquid which is a solvent for the polymerizable monomers, but a non-solvent for the resultant polymer, and (II) polymeric dispersion stabilizer, wherein the reaction is carried out at elevated temperatures such that the dispersion polymer is first formed and then is crosslinked, said dispersion stabilizer being the reaction product of:

(A) long chain hydrocarbon molecules bearing only one reactive group per said molecules; and

(B) monomers bearing an ethylenic unsaturation and a functional group capable of reaction with said reactive group of said hydrocarbon molecules, wherein said hydrocarbon molecules and said monomers are reacted in amounts sufficient to allow reaction in about a 1:1 molar ratio.

4,605,721

NOVEL GRAFT COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Waylon L. Jenkins; James M. Hawkins, both of Kingsport, and I. Daniel Sand, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 605,341, Apr. 30, 1984, abandoned. This application Apr. 19, 1985, Ser. No. 725,186

Int. Cl.[4] C08G *81/00, 83/00*

U.S. Cl. 527—312 52 Claims

1. A novel polymeric composition of matter comprising the reaction product of an ethylenically unsaturated monomer and a carboxylated cellulose ester having an acid number of at least about 5, an inherent viscosity of from about 0.01 to about 1.00 and wherein the anhydroglucose units thereof have ring substituents comprising by weight based on total polymer weight, of from about 0.05 to about 20% hydroxyl groups, from about 0.5 to about 44% acetyl groups, from 0 to about 54% butyryl groups, from 0 to about 47% propionyl groups, from about 0.4 to about 4.0% total carboxyl groups wherein from about 20% to about 100% of these carboxyl groups are non-saponifiable backbone, and wherein the material has a lactone level of from about 4.52×10^{-5} to about 6.13×10^{-4}.

4,605,722

METHOD FOR SUPPRESSING THE GENERATION OF HYDROGEN GAS FROM CURED SILICONE MATERIALS

Toshio Suzuki, Ichihara, Japan, assignor to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1985, Ser. No. 745,113

Claims priority, application Japan, Jun. 29, 1984, 59-134541

Int. Cl.[4] C08G *77/06*

U.S. Cl. 528—15 11 Claims

1. A method for suppressing the generation of hydrogen gas from cured silicone material which is cured by the addition reaction of lower alkenyl groups with silicon-bonded hydrogen atoms in the presence of a platinum catalyst comprising

bringing the cured silicone material into contact with a gaseous, liquid, or dissolved hydrogen gas suppressing material selected from the group consisting of phosphorus compound, sulfur compound, nitrogen compound, and compound containing an aliphatically unsaturated bond, and said hydrogen gas suppressing material containing at least 0.1 weight percent phosphorus, sulfur, nitrogen, or aliphatically unsaturated bond, and thereafter

removing the cured silicone material from the hydrogen gas suppressing material.

4,605,723

SHELF-STABLE, ISOCYANATE (NCO) FREE URETHANE UREA ACRYLATE RESINS

Werner Flakus, Recklinghausen, Fed. Rep. of Germany, assignor to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,132

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1984, 3421826

Int. Cl.[4] C08G *18/10*

U.S. Cl. 528—49 11 Claims

1. A storage-stable, substantially NCO-free urethane urea acrylate which after radiation curing forms strongly adhering, solvent resistant, wear resistant coatings comprising isophorone diisocyanate (IPDI) or adducts thereof which have been partially acrylated with one or more hydroxyacrylates to the extent of about 10–25 equivalent %, which material subsequently has been reacted to the extent of about 10–75 equivalent % with one or more polyhydroxy compounds, wherein the remaining NCO equivalents have been fixed with urea bonds with one or more primary or secondary diamino compounds having about 2 to 18 carbon atoms.

4,605,724

HIGH SOLIDS LACTONE-POLYESTER POLYOLS AND COATING COMPOSITIONS THEREOF

Ronald R. Ambrose, Allison Park; Wen-Hsuan Chang; David T. McKeough, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 1, 1984, Ser. No. 656,555

Int. Cl.[4] C08G *18/32, 18/42*

U.S. Cl. 528—73 9 Claims

1. A polyester-urethane polyol which is prepared by reacting a polyisocyanate with a stoichiometric excess of being a polyester polyol; the polyester polyol being formed by:

(1) reacting a diol with a lactone or a functional equivalent thereof, wherein the diol is in an amount sufficient to produce a reaction product containing about 5 percent or higher of unreacted diol; followed by

(2) removing about 30 percent or higher of the unreacted diol under essentially non-reacting conditions.

4,605,725

POLYURETHANE SEALANT COMPOSITIONS AND THEIR USE AS THERMAL-BREAK SEALANTS

Donald L. Christman, Grosse Ile, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Nov. 14, 1984, Ser. No. 671,454

The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.

Int. Cl.[4] C08G *18/32*

U.S. Cl. 528—77 19 Claims

1. A non-cellular polyurethane composition comprising the reaction product of

(a) a polyoxyalkylene polyether polyol other than one derived from monoethanolamine,

(b) an ethylene oxide propylene oxide adduct of monoethanolamine having a molecular weight range from about 200 to about 500,

(c) optionally pigment, catalyst and inorganic filler, and

(d) an organic polyisocyanate.

4,605,726

POLYESTERCARBONATE FROM SPIRO DIHYDRIC PHENOL

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 544,004, Oct. 21, 1983, Pat. No. 4,552,949. This application Sep. 6, 1985, Ser. No. 773,117

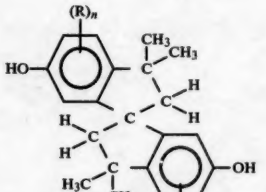
Int. Cl.[4] C08G *63/64*

U.S. Cl. 528—190 18 Claims

1. Aromatic thermoplastic polymer exhibiting improved heat distortion temperatures derived from:

(i) a carbonate precorsor; and

(ii) at least one spiro dihydric phenol selected from spiro dihydric phenols represented by the general formula



wherein:

R is independently selected from monovalent hydrocarbon radicals or halogen radicals; and

n is independently selected from positive integers having a value of from 0 to 3 inclusive; and

(iv) at least one difunctional carboxylic acid or an ester forming reactive derivative thereof.

4,605,727

HIGH MODULUS POLYESTER

Toshihide Inoue, Ichinomiya; Toshimasa Hirai, and Masaru Okamoto, both of Nagoya, all of Japan, assignors to Director General of the Agency of Industrial Science and Technology, Tokyo, Japan

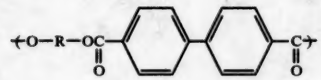
Filed Feb. 28, 1985, Ser. No. 706,948

Claims priority, application Japan, Mar. 9, 1984, 59-43767; Mar. 9, 1984, 59-43768

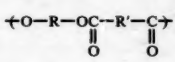
Int. Cl.[4] C08G *63/02, 63/68*

U.S. Cl. 528—191 **9 Claims**

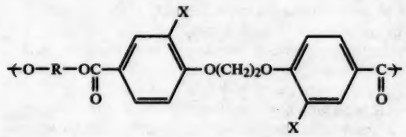
1. A high modulus polyester consisting essentially of the following structural units (I) and/or (II) and (III), the structural units (I) and (II) occupying 51-99 mol % of the whole and the structural unit (III) occupying 49-1 mol % of the whole:



(I)

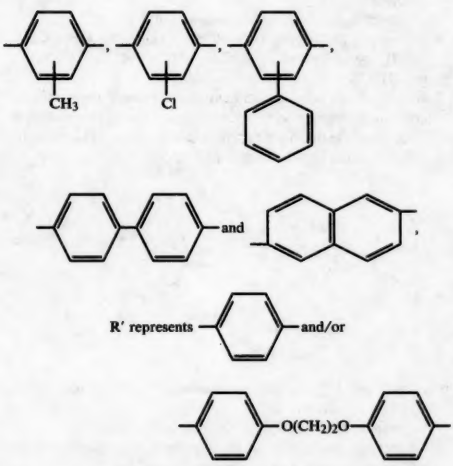


(II)



(III)

wherein R represents one or more divalent radicals selected from the group consisting of



and X represents chlorine or bromine atom.

4,605,728

HIGH STRENGTH COPOLYESTER

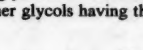
William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 9, 1985, Ser. No. 774,215

Int. Cl.[4] C08G *69/44*

U.S. Cl. 528—289 **19 Claims**

1. A polyester comprised of repeat units which are derived from (a) at least one diacid component and (b) a diol component which is comprised of (1) from 2 to 90 mole percent of at least one bis-hydroxyalkyl pyromellitic diimide and (2) from 10 to 98 mole percent of one or more members selected from the group consisting of glycols containing from 2 to 12 carbon atoms, glycol ethers containing from 4 to 12 carbon atoms, and polyether glycols having the structural formula:



wherein A is an alkylene group containing from 2 to 6 carbon atoms and wherein n is an integer from 2 to 400.

4,605,729

PROCESS FOR THE PRODUCTION OF POLYETHERESTER POLYOLS AND THE PRODUCTS AND USE THEREOF

James M. Barnes, Wermelskirchen, and Werner Betz, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,071

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1984, 3437915

Int. Cl.[4] C08G *63/66*

U.S. Cl. 528—301 **13 Claims**

1. A process for the production of polyetherester polyols comprising

(A) reacting

(1) at least one polyoxyalkylene ether polyol having a molecular weight of from 400 to 10,000 with

(2) at least one member selected from the group consisting of

(i) dicarboxylic acids,

(ii) di-C_1–C_4 alkyl ester of said acids,

(iii) anhydrides of said acids, and

(iv) mixtures thereof,

at a molar ratio of carboxyl resp. anhydride groups to hydroxyl groups of from (1.4)/n:1 to 8/n:1 where n=1 for components (2)(i) and (2)(ii) and where n=2 for component (2)(iii), and

(B) reacting the product of step (A) with at least one aliphatic and/or cycloaliphatic diol having a molecular weight of from 62 to 399 at a hydroxyl to carboxyl equivalent ratio of at least 1.6:1.

4,605,730

SURGICAL ARTICLES OF COPOLYMERS OF GLYCOLIDE AND ε-CAPROLACTONE AND METHODS OF PRODUCING THE SAME

Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 432,176, Oct. 1, 1982, abandoned. This application Jun. 10, 1985, Ser. No. 743,117

Int. Cl.[4] C08G *63/10*

U.S. Cl. 528—357 **6 Claims**

1. A process for producing a copolymer of glycolide and ε-caprolactone comprising:

forming a low molecular weight pre-polymer of ε-caprolactone and glycolide, said pre-polymer comprising more than 50 weight percent of ε-caprolactone, and being produced at a temperature of below 220° C., and

adding additional glycolide to said pre-polymer and polymerizing said mixture containing the additional glycolide at a temperature above 140° C. for a period of time suffi-

cient to produce a conversion to copolymer of at least 80 percent and copolymer having a crystallinity of at least 5 percent.

4,605,731

METHOD FOR PREPARING LINEAR POLYCARBONATE FROM CYCLIC OLIGOMER WITH ARYL CARBANION GENERATING CATALYST

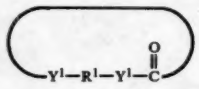
Thomas L. Evans, Clifton Park, and David A. Williams, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1985, Ser. No. 723,672

Int. Cl.[4] C08G 63/62

U.S. Cl. 528—371 **13 Claims**

1. In a method for preparing a resinous composition by contacting with a polycarbonate formation catalyst a composition comprising cyclic oligomers having the formula



(I)

wherein each R^1 is independently a divalent aliphatic, alicyclic or aromatic radical, each Y^1 is independently oxygen or sulfur and n is from 2 to about 30; the improvement which comprises employing as the polycarbonate formation catalyst at least one compound which generates aryl carbanions at temperatures up to about 300° C.

4,605,732

PROCESS FOR THE PRODUCTION OF POLYARYLENE SULPHIDES WITH FUNCTIONAL END GROUPS

Walter Heitz, Kirchhain, and Wolfgang Koch, Mittenaar, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,204

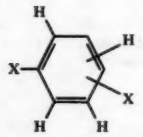
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 3421608

Int. Cl.[4] C08G 75/14

U.S. Cl. 528—388 **1 Claim**

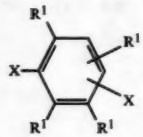
1. Process for the production of polyarylene sulphides with functional end groups wherein

(a) from 50 to 100 mol % of dihalogen aromatic substances correspond to the formula (I)



(I)

and from 0 to 50 mol % of dihalogen aromatic substances corresponding to the formula (II)



(II)

in which

X represents halogen in the meta or para position relative to each other,

R^1 is the same or different and each represents hydrogen, C_1–C_4-alkyl, C_5–C_{10}-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{14}-alkylaryl, C_7–C_{14}-arylalkyl, wherein two radicals R^1 in the ortho position relative to each other are bound to an aromatic or heterocyclic ring containing up to 10 ring atoms, wherein up to 3 ring carbon atoms are replaced by hetero atoms and one radical —R^1 is always different from hydrogen,

is reacted at 140° to 280° C. with

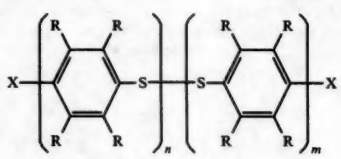
(b) alkali metal sulphide, the molar ratio of a:b lying in the range of from 1:1 to 1:2,

(c) organic solvent, the molar ratio of alkali sulphide (b) to the organic solvent (c) lying in the range of from 1:2 to 1:20, and

(d) water in the form of hydration or free water, the molar ratio of b:d lying in the range of from 1:0 to 1:9,

and further wherein the reaction is carried out in the presence of

(i) a dihalogenated aromatic disulphide corresponding to formula (III)



(III)

in which

X represents halogen,

R represents hydrogen, a C_1–C_4-alkyl radical, a C_5–C_{10}-cycloalkyl radical, a C_7–C_{14}-aryl radical and the total number of carbon atoms in each aromatic substance is from 6 to 30, with the proviso that —R is hydrogen in at least 50 mol % of the disulphide used,

n and m are integers of from 1 to 5,

and with the further proviso that the molar ratio of the disulphide to the p-dihalogen benzene corresponding to formulae (I) and (II) is in the range of 0.01:1 to 1.0:1 and

(ii) a compound which is monofunctional under the reaction conditions which comprises a compound corresponding to the formula (IV)

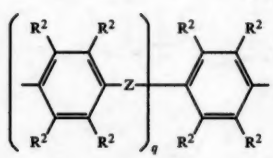
$$D—Q—Y_t \qquad \text{(IV)}$$

wherein

D represents chlorine, bromine or a vinyl group

Y represents hydrogen, —O—CH=CH_2, —S—CH=CH_2, —OH, —OR^2, —SR^2, —NR^2, —NO_2, —CN, —$COOR^2$, or CHO,

Q represents an alkylene radical or a cycloalkylene radical containing from 1 to 10 carbon atoms, an arylene radical containing from 6 to 10 carbon atoms, or an arylene radical corresponding to formula (V)



(V)

t is 1 or 2 when Q is arylene containing 6 to 10 carbon atoms and is otherwise 1,

Z represents CH_2, $C(CH_3)_2$, sulphur or oxygen

R^2 represents hydrogen, an alkyl radical, a cycloalkyl radical, an aryl radical or a mixture thereof, and

q represents the number 0 or 1.

4,605,733

POLYARYLENE SULFIDE PREPARATION METHOD WITH DITHIONITE

Guy Senatore, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1984, Ser. No. 646,188
Int. Cl.[4] C08G *75/16*
U.S. Cl. 528—388 21 Claims

1. A method for the preparation of a poly(arylene sulfide) comprising:

contacting in a reaction mixture a dihaloaromatic compound, a sulfur-containing compound, a polar organic compound, and an alkali metal or alkaline earth metal dithionite, under suitable polymerization conditions for the formation of the poly(arylene sulfide), said sulfur-containing compound being selected from the group consisting of elemental sulfur, alkali metal sulfides, alkali metal bisulfides, alkali metal and alkaline earth metal thiosulfates, substituted and unsubstituted thioureas, thiocarbamates, thiocarbonates, carbon disulfide, carbon oxysulfide, mercaptans, mercaptides, thiomides and sulfides having an alpha or beta activating substituent.

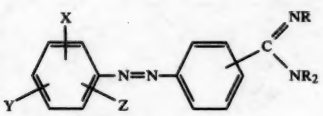
4,605,734

BASIC DERIVATIVES OF AZO BENZENE

Douglas Shortridge, 36 Parkside Road, Leeds LS6 4QG, England

Filed Sep. 25, 1984, Ser. No. 654,319
Claims priority, application United Kingdom, Sep. 27, 1983, 8325755
Int. Cl.[4] C07C *107/06;* A61K *31/655*
U.S. Cl. 534—738 6 Claims

1. A compound of the formula



where X is $-NH_2$ or

Y is hydrogen or $-NH_2$, Z is hydrogen or hydroxyl, and each R is independently hydrogen, methyl or ethyl, provided that when X is

then Y is hydrogen and Z is hydroxyl and when X is $-NH_2$ then Y is $-NH_2$; or a compound of the above formula except that a ring carbon atom in either ring is replaced by a nitrogen atom; or an acid addition salt of said compounds.

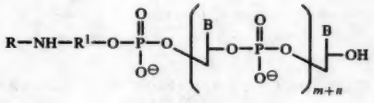
4,605,735

OLIGONUCLEOTIDE DERIVATIVES

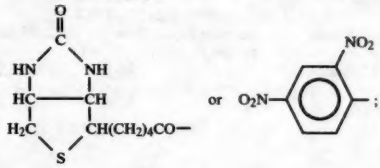
Kenichi Miyoshi; Masanori Suzuki, and Toru Fuwa, all of Hiroshima, Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1984, Ser. No. 578,678
Claims priority, application Japan, Feb. 14, 1983, 58-22516; Apr. 28, 1983, 58-75878
Int. Cl.[4] C07H *19/10, 19/20*
U.S. Cl. 536—27 5 Claims

1. A nucleotide comprising an oligonucleotide of the formula



wherein R is



(m+n) is an integer from 1 to 46; R^1 is a straight or branched C_2–C_{20} alkylene; and each B may be the same or different and is at least one nucleoside residue carrying a base B selected from the group consisting of adenine, cytosine, guanine and thymine.

4,605,736

TITANIUM-GLYCOL USEFUL, AS CROSSLINKING AGENTS, FOR POLYGALACTOMANNANS

Michael E. Morgan, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 11, 1985, Ser. No. 743,246
Int. Cl.[4] C07H *1/00*
U.S. Cl. 536—114 13 Claims

1. A process for crosslinking polygalactamannans which comprises adding to an aqueous solution of polygalactomannans having a pH of about 4 to about 8 a crosslinking agent which is titanium tetrachloride dissolved in a water-soluble organic alcohol or diol at a concentration of about 1 to about 50 weight percent based on the total weight of titanium tetrachloride and water-soluble organic alcohol or diol, and wherein the pH after the addition is about 2.5 to about 6.

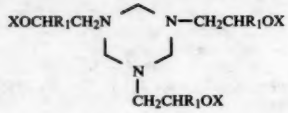
4,605,737

ACYL DERIVATIVES OF TRIS-HYDROXY-ETHYL-PERHYDRO-1,3,5-TRIAZINE

Andrew T. Au, Needham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1984, Ser. No. 602,779
Int. Cl.[4] C07D *251/04*
U.S. Cl. 544—215 5 Claims

1. A compound corresponding to the formula:



wherein

R_1 is hydrogen, methyl or ethyl; and

X is hydrogen, $—CH_2CHR_1O)_nR$ or —C(O)R, where n is a number from zero to about 4, and R is alkyl, cycloalkyl, alkenyl or aryl of up to about 30 carbons,

provided that in at least on occurence, X is —C(O)R.

4,605,738

PRODUCTION OF 1-PHTHALIDYL-5-FLUOROURACIL DERIVATIVES

Susumu Kamata, Hyogo; Nobuhiro Haga, Osaka; Wataru Nagata, Hyogo, and Takeaki Matsui, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

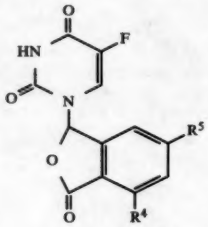
Filed Nov. 9, 1983, Ser. No. 550,219

Claims priority, application Japan, Nov. 18, 1982, 57-203482

Int. Cl.[4] C07D *239/10, 307/83*

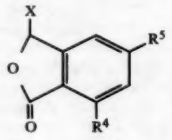
U.S. Cl. 544—310 **6 Claims**

1. A process for producing a 1-phthalidyl-5-fluorouracil of the formula



wherein

R^4 and R^5 each represents hydrogen, trialkylsilyloxy, alkoxy, nitro, cyano, carboxy or alkoxycarbonyl which consists essentially of reacting a phthalidyl compound of the formula:



wherein

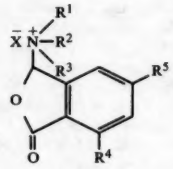
X represents halogen, trihalogenoacetyloxy, alkylsulfonyloxy or arylsulfonyloxy; and

R^4 and R^5 each has the same significance as defined above with a tertiary amine of the formula:

wherein

R^1, R^2 and R^3 each represents alkyl, or R^1 represents alkyl, and R^2 and R^3 taken together with the adjacent nitrogen atom form a saturated 5- or 6-membered ring which may contain an oxygen, or

represents quinuclidine, to yield a phthalidylammonium compound of the formula



wherein

X, R^1, R^2, R^3, R^4 and R^5 each has the same significance as defined above

and reacting the latter with 5-fluorouracil.

4,605,739

BENZOYL INDOLECARBOXYLATES

Setsuro Fujii, Toyonaka; Eizou Hattori, Sakado; Mitsuteru Hirata, Saitama; Hisashi Kunieda, Higashi-Murayama; Koichiro Watanabe, Niiza, and Hiroshi Ishihama, Higashi-Murayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

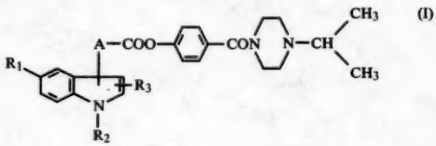
Filed May 10, 1984, Ser. No. 608,957

Claims priority, application Japan, May 19, 1983, 58-87899

Int. Cl.[4] C07D *403/12;* **A61K** *31/495*

U.S. Cl. 544—373 **9 Claims**

1. A benzoyl indolecarboxylate having the following formula or a pharmaceutically acceptable acid addition salt thereof:



(I)

wherein

R^1 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy group;

R^2 is a hydrogen atom, or a lower alkyl, acetyl or benzoyl group;

R^3 is a hydrogen atom or a lower alkyl group; and

A is a direct bond, or a lower alkylene or vinylene group substituted at the 2-, 3- or 5-position of the indole nucleus.

4,605,740

PROCESS FOR THE PRODUCTION OF N-SUBSTITUTED ACRYLIC ACID AMIDES

Alfons Landscheidt, Krefeld, Fed. Rep. of Germany, assignor to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,535

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235398

Int. Cl.[4] C07D *405/12, 102/06, 103/133, 307/93*

U.S. Cl. 544—376 **13 Claims**

1. A process for the production of N-substituted acrylic acid amides, which comprises converting a 2-carboalkoxy-t-

oxabicyclo(2,2,1)hept-5-ene to a 2-carboxamide-7-oxabicyclo(2,2,1)hept-5-ene with a primary or secondary amine selected from the group consisting of N,N-dimethylaminoethylamine, N,N-diethylaminoethylamine, N,N-dipropylaminoethylamine, N-ethylaminoethylamine, N-isopropylaminoethylamine, N-t-butylaminoethylamine, N,N-dimethylaminopropylamine, N,N,2,2-tetramethyl-1,3-diaminepropane, N,N-diethylaminopropylamine, N-methyl-piperazine and N-methyl-N'(2-aminoethyl)-piperazine, and thermally decomposing said 2-carboxamide-7-oxabicyclo(2,2,1)hept-5-ene to furane and the N-substituted acrylic acid amide.

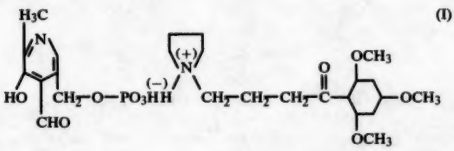
4,605,741

PHARMACEUTICALLY ACTIVE SALT DERIVATIVE OF 3-HYDROXY-5-(HYDROXYMETHYL)-2-METHYLISONICOTINALDEHYDE PHOSPHATE

Giorgio Zagnoli, Como; Ubaldo Conte, and Paolo Colombo, both of Pavia, all of Italy, assignors to Lisspharma Spa, Erba, Italy

Filed Nov. 13, 1985, Ser. No. 797,487
Int. Cl.[4] C07D *401/12*; C07F *9/58*
U.S. Cl. 546—24 **1 Claim**

1. Pharmacologically active salt derivative constituted by 4-(1-pyrrolidinyl)-1-(2,4,6-trimethoxyphenyl)-1-butanone 3-hydroxy-5-(hydroxymethyl)-2-methylisonicotinaldehyde-phosphate, having the following structural formula:



(I)

4,605,742

PROCESS FOR THE PRODUCTION OF PIPERIDINE

Shoichiro Mori; Tadamichi Aoki; Ryozo Hamana, and Yutaka Nomura, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,125
Claims priority, application Japan, Feb. 13, 1984, 59-22901
Int. Cl.[4] C07D *295/02*
U.S. Cl. 546—184 **16 Claims**

1. A process for the production of piperidine, comprising:

continuously introducing hydrogen and liquid furfurylamine, tetrahydrofurfurylamine or a mixture thereof into a reaction zone;

hydrogenating said furfurylamine, tetrahydrofurfurylamine or mixture thereof reactant while maintaining liquid phase conditions within the reaction zone in the presence of a hydrogenation catalyst at a constant temperature; and

continuously withdrawing product piperidine from the reaction zone as a gas with excess hydrogen gas.

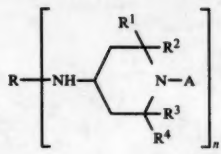
4,605,743

PROCESS FOR THE PRODUCTION OF 2,2,6,6-TETRAALKYL-4-PIPERIDYLAMINES

Russell E. Malz, Jr., Naugatuck, and Harold Greenfield, Watertown, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Apr. 16, 1985, Ser. No. 723,770
Int. Cl.[4] C07D *401/12, 401/14*
U.S. Cl. 546—186 **14 Claims**

1. A process for producing compounds of the formula:



(I)

wherein:

R is C_1–C_{18} alkyl, C_5–C_6 cycloalkyl or C_7–C_9 aralkyl;

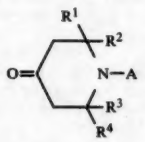
R^1, R^2, R^3 and R^4 are the same or different and are C_1–C_8 alkyl;

A is hydrogen, hydroxy, C_1–C_8 alkoxy, C_1–C_8 alkyl, C_2–C_{10} alkylcarbonyl or arylcarbonyl; and

n is 1, 2, 3 or 4;

with the proviso that when n is 2, 3 or 4, the R^1, R^2, R^3, R^4 and A substituents of the piperidine rings may each independently be different members within the scope of their definitions;

which process comprises reacting an amine of the formula $R(NH_2)_n$, wherein R and n are as defined above, with at least one 2,2,6,6-tetraalkyl-4-piperidone of the formula:



(II)

wherein A, R^1, R^2, R^3 and R^4 are as defined above; in the presence of a palladium catalyst employing a reaction medium selected from the group consisting of water and a mixture of water and C_1–C_3 aliphatic alcohols.

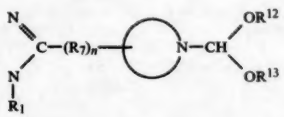
4,605,744

IMIDAZOLE DERIVATIVES

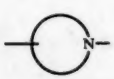
Chung-Chen Wei, Cedar Knolls, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 568,329, Jan. 5, 1984, Pat. No. 4,537,969, which is a division of Ser. No. 359,326, Mar. 18, 1982, Pat. No. 4,431,653. This application May 20, 1985, Ser. No. 736,185
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Int. Cl.[4] C07D *401/06*
U.S. Cl. 546—210 **3 Claims**

1. A compound of the formula

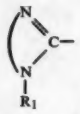


wherein n is an integer from 0 to 1; R_1 is hydrogen or lower alkyl;



is a saturated 5 to 7 membered heterocyclic ring containing the nitrogen atom as the only hetero atom in said ring,

said ring being unsubstituted or substituted in one or more positions with lower alkyl;



is a 5 to 7 membered heterocyclic ring which contains no additional double bond or when it is 5 membered can be also aromatic; said ring being either unsubstituted or substituted in one or more positions with lower alkyl; R_{12} and R_{13} are lower alkyl or taken together form $—CH_2—$ $—(CH_2)_x—CH_2—$; x is an integer from 0 to 2; and R_7 is lower alkylene.

2. The compound of claim 1 wherein said compound is 4-[2-(4,5-dihydro-1H-imidazol-2-yl)ethyl]-1-piperidine carboxaldehyde dimethyl acetal.

4,605,745

N-NEOPENTYL-4-DIORGANOAMINO PYRIDINIUM COMPOUNDS

Daniel J. Brunelle, Scotia, N.Y., and Daniel A. Singleton, Minneapolis, Minn., assignors to General Electric Company, Schenectady, N.Y.

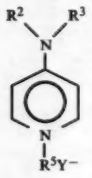
Division of Ser. No. 489,689, Apr. 28, 1983, Pat. No. 4,513,141. This application Dec. 24, 1984, Ser. No. 685,512

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.[4] C07D *213/74, 401/04;* **C07B** *41/00, 43/00*

U.S. Cl. 546—304 **5 Claims**

1. Diorganoaminopyridinium salts of the formula,



where R^2 and R^3 are members selected from the class consisting of monovalent or divalent radicals selected from $C_{(1-13)}$ hydrocarbon radicals and $C_{(1-8)}$ divalent alkylene radicals which can be part of a cyclic structure forming a $C_{(4-12)}$ ring, R^5 is a neopentyl radical and Y is a counter ion.

4,605,746

NOVEL TETRASUBSTITUTED BICYCLIC AMIDE ACETALS AND PROCESS FOR THEIR MANUFACTURE

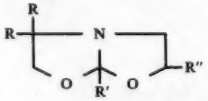
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 16, 1984, Ser. No. 641,238

Int. Cl.[4] C07D *498/04;* **C10M** *1/32*

U.S. Cl. 548—218 **4 Claims**

1. The composition conforming to the Formula



wherein R represents an Alkyl group having from 1 to 10 Carbon Atoms, R′ represents an Alkyl group having from 1 to 20 Carbon Atoms or an Aryl group having from 6 to 12 Carbon Atoms and R″ represents A member selected from the group consisting of $—CH_2OC_6H_5$ and $—CH_2OCH_2CH=CH_2$.

4,605,747

α-BENZYL-α-TRIAZOLYL PINACOLONE COMPOUNDS

Sugavanam Balasubramanyan, Vienna, Austria, and Margaret C. Shephard, Maidenhead, England, assignors to Imperial Chemical Industries PLC, London, England

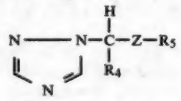
Continuation-in-part of Ser. No. 60,166, Jul. 24, 1979, abandoned, which is a continuation of Ser. No. 879,872, Feb. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,063, Dec. 30, 1977, abandoned, which is a division of Ser. No. 718,207, Aug. 26, 1976, Pat. No. 4,079,143. This application Aug. 13, 1985, Ser. No. 765,147

Claims priority, application United Kingdom, Aug. 26, 1975, 35208/75; Sep. 10, 1975, 37241/75; Jul. 2, 1976, 27649/76

Int. Cl.[4] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 548—262 **5 Claims**

1. A compound of the formula:



wherein R_4 is benzyl or benzyl ring-substituted with halogen, R_5 is t-butyl, and Z is C=O or C=NH, or a salt of said compound.

4,605,748

BENZOCYCLOALKANE-THIOPHENEMETHYL COMPOUNDS AS INTERMEDIATES

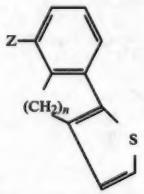
Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 461,420, Jan. 27, 1983, Pat. No. 4,487,778. This application Apr. 18, 1984, Ser. No. 601,461

Int. Cl.[4] C07D *333/80*

U.S. Cl. 549—43 **14 Claims**

1. Benzocycloalkanethiophenemethyl compounds of the formula



wherein Z is $Y—CH_2—$ or R_1, n is 2 or 3, Y is hydroxyl or a leaving group readily displaced by carboxylate anions, and R_1 is selected from chloro, cyano and hydroxycarbonyl.

4,605,749

PRODUCTION OF ALDEHYDES

Ouri Buchman, and Ilan Pri-Bar, both of Omer, Israel, assignors to State of Israel, Prime Minister's Office, Atomic Energy Commission, Beer-Sheva, Israel

Filed Jun. 20, 1985, Ser. No. 746,952

Int. Cl.[4] C07C *45/49*

U.S. Cl. 549—70 **9 Claims**

1. A process for the production of aldehydes of the general formula

R—CHO

wherein R designates an aliphatic, aromatic, araliphatic, polycyclic, or heterocyclic group which may be substituted by one or more identical or different non-interfering substituents, which comprises reacting an organic halide of the formula

R—X

where R is as defined above and X is an iodine or bromine atom, with carbon monoxide at a superatmospheric pressure, of up to about 10 atmospheres and at a temperature of from 50° to 150° C., in a reaction mixture containing:

(a) a catalyst consisting of a palladium or cobalt metal compound or complex soluble in the reaction mixture;

(b) a hydrogen donor capable of transferring hydrogen in the reaction mixture, selected from the group consisting of poly (methylhydrosiloxanes), trialkylhydrosilanes and formic acid salts; and

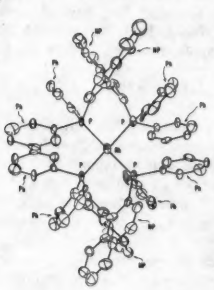
(c) a base which reacts with hydrogen halide formed during the reaction.

4,605,750

RHODIUM-PHOSPHINE COMPLEX

Hidenori Kumobayashi, and Susumu Akutagawa, both of Kanagawa, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1984, Ser. No. 651,123
Claims priority, application Japan, Sep. 16, 1983, 58-169283
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—7 **1 Claim**



1. A rhodium-phosphine complex represented by the formula (I):

$$[Rh(BINAP)_2]^+Y^- \quad (I)$$

wherein BINAP represents 2,2'-bis(diphenylphosphino)-1,1'-binaphtyl; and Y represents ClO_4, PF_6, BF_4, PCl_6 or $B(C_6H_5)_4$.

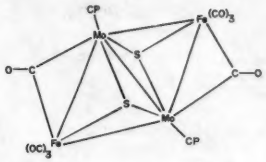
4,605,751

BIMETALLIC CLUSTER CATALYSTS

M. David Curtis; Johannes W. Schwank; Levi T. Thompson, and P. Douglas Williams, all of Ann Arbor, Mich., assignors to The Board of Regents Acting For and On Behalf of the University of Michigan, Ann Arbor, Mich.

Filed Jan. 17, 1984, Ser. No. 572,201
Int. Cl.[4] C07F *11/00, 15/02*
U.S. Cl. 556—29 **16 Claims**

1. The heterobimetallic cluster complex selected from the group consisting of $Cp_2Mo_2Fe_2(\mu\text{-}S)_2(CO)_8$; $Cp_2Mo_2Ni_2(\mu_3\text{-}S)_4(CO)_2$; $Cp_2Mo_2Co_2(\mu_3\text{-}S)_2(\mu_4\text{-}S)(CO)_4$; $Cp_2Mo_2Fe_2(\mu_3\text{-}S)_4(CO)_6$ and $Cp_4Mo_2Ni_2S_4$ where $Cp=\eta^5\text{-}C_5H_4R$ and R is $-CH_3$ or $-H$.

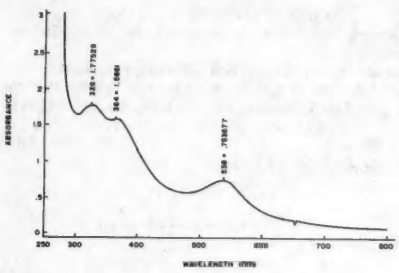


4,605,752

QUATERNARY AMMONIUM TETRATHIOVANADATES

Richard P. Rhodes, Westfield, and Thomas R. Halbert, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1984, Ser. No. 669,900
Int. Cl.[4] C07F *9/00*
U.S. Cl. 556—42 **9 Claims**



1. A quaternary ammonium tetrathiovanadate having the following formula:

$$(R_1R_2R_3R_4N)_3VS_4$$

wherein R_1, R_2, R_3, R_4 may each be independently an alkyl group having from 1 to 30 carbon atoms or an aryl or alkylaryl group having from 6 to 30 carbon atoms.

4,605,753

SILVER SULFINATE PHYSICAL DEVELOPER FOR HEAT-DEVELOPABLE PHOTOGRAPHIC FILMS

Ross A. Lee, Webster, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

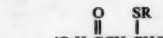
Division of Ser. No. 547,472, Oct. 31, 1983, Pat. No. 4,529,689.
This application Mar. 20, 1985, Ser. No. 714,195
Int. Cl.[4] C07F *1/10*
U.S. Cl. 556—111 **4 Claims**

1. A process for the synthesis of a silver sulfinate according to the following reaction:

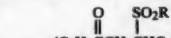
I. reacting a thiol (RSH) with chalcone

$$(C_6H_5\overset{O}{\overset{\|}{C}}CH{=}CHC_6H_5)$$

to form a sulfide



II. oxidizing said sulfide to a sulfone



III. converting said sulfone by means of an alkaline cleavage reaction to form a sodium sulfinate

and

IV. reacting said sodium sulfinate with silver nitrate to form silver sulfinate, where RSH in step I is a thiol taken from the group consisting of hexadecanethiol, dodecylthiol, nonylthiol, hexanethiol, 3-phenylpropanethiol, cyclohexanethiol, 1,4-butanedithiol, and 1,9-nonanedithiol.

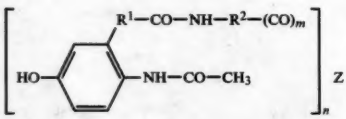
4,605,754

ACETAMINOPHEN ANALOGS

Pyare Khanna, San Jose, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 552,955, Nov. 17, 1983, Pat. No. 4,504,413, which is a division of Ser. No. 364,836, Apr. 2, 1982, Pat. No. 4,424,150. This application Jan. 17, 1985, Ser. No. 692,791
Int. Cl.[4] C07C *101/04, 101/24, 79/46*
U.S. Cl. 560—19 8 Claims

1. A compound of the formula:



wherein:

R^1 is an aliphatic linking group of from 1 to 12 carbon atoms;

R^2 is an aliphatic linking group of from 1 to 12 carbon atoms;

Z is hydrogen, hydroxyl, alkoxyl of from 1 to 6 carbon atoms, or a group capable of forming an activated ester capable of amide formation with an amino acid in an aqueous medium;

m is one; and

n is one.

4,605,755

PREPARATION OF 1,1-DIPHENYL-2-CARBOETHOXYCYCLOPROPANE

Andrea Leone-Bay, Ridgefield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 2, 1985, Ser. No. 761,987
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—101 19 Claims

1. An improved process for preparing racemic 1,1-diphenyl-2-carboethoxycyclopropane from 1,1-diphenylethylene and ethyl diazoacetate as reactants, wherein the improvement comprises:

conducting the reaction in the absence of a metallic-based catalyst and at a reaction temperature from 110° C. to 150° C. to permit a yield of at least 20 percent to be obtained, based on the weight of 1,1-diphenylethylene.

4,605,756

PROCESS FOR THE IN SITU PRODUCTION OF UREA GROUP-CONTAINING ISOCYANATES IN POLYOLS

Gerhard Grögler, Leverkusen; Richard Kopp, Cologne, and Heinrich Hess, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,623
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347247
Int. Cl.[4] C07C *119/048*
U.S. Cl. 560—351 5 Claims

1. A process for the in situ production of dispersions or solutions of urea group-containing aromatic isocyanates by the reaction of aromatic isocyanates with water in solvents, characterized in that:

(a) aromatic diisocyanates and/or polyisocyanates are reacted in

(b) relatively high molecular weight liquid or low-melting di- or poly-hydric polyols having molecular weights of from 400 to 10,000 with

(c) from about 0.15 to about 0.40 mols of water per NCO equivalent, in the presence of

(d) from about 0.1 to about 2.5%, by weight, based on aromatic polyisocyanates, of catalysts which accelerate the NCO/water reaction to a greater extent than the NCO/hydroxyl reaction, at a temperature of up to 80° C. until the end of CO_2 evolution.

4,605,757

METHOD OF PREPARING HALOGEN BENZOIC ACIDS FROM TOLUENES HALOGENATED IN THE NUCLEUS

Marcel Feld, Cologne, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,110
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308448
Int. Cl.[4] C07C *51/265*
U.S. Cl. 562—416 10 Claims

1. A method for preparing a halogen benzoic acid comprising oxidizing the corresponding nuclear halogenated toluene with oxygen or a gas containing oxygen, in acetic acid as solvent, in the presence of soluble cobalt and/or manganese compounds present in catalytic amounts and of a bromide ions supplying substance selected from the group consisting of NaBr, NH_4Br, KBr, HBr, and $CoBr_2$, at elevated temperatures of about 80° to 220° C. and pressures of about 1 to 50 bars, wherein for each weight-part of halogenated toluene, 1.5 to 4.5 wt-parts of a water-diluted acetic acid are used, containing 1 to 35 wt-% of water and a content of a soluble ammonium and/or alkali and/or alkaline earth compound of more than 1.0 equivalents per equivalent of a bromide ion-yielding compound used in the reaction mixture.

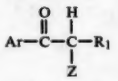
4,605,758

PREPARATION OF α-ARYLALKANOIC ACIDS

George C. Schloemer, Lyons, Colo., assignor to Syntex Pharmaceuticals International Ltd., Hamilton, Bermuda

Continuation of Ser. No. 329,672, Dec. 11, 1981, abandoned. This application Apr. 23, 1984, Ser. No. 602,834
Int. Cl.[4] C07C *51/16*
U.S. Cl. 562—418 24 Claims

1. A process for producing a stereoisomer of the compound of the formula:

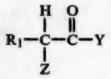


in the substantial absence of any other stereoisomer of said

compound which comprises contacting an organometallic compound of the formula:

ArMX

with an optically active acyl halide, acyl amine or acid anhydride of the formula:



wherein Ar is substituted or unsubstituted naphthyl, M is magnesium, R_1 is methyl, X is halogen, Y is halogen, the group of the formula:

wherein R′ and R″ are alkyl or aryl or when taken together with N form a heterocyclic moiety which optionally can contain other hetero atoms, or acyloxy, and Z is a protected hydroxy group or a sulfonyloxy group of the formula:

wherein R_2 is alkyl, cycloalkyl, alkenyl, alkynyl, aryl or arylalkyl.

4,605,759

PROCESS FOR PRODUCTION OF β-PHENYLSERINE

Ryuichi Mita; Toshio Katoh, both of Kawasaki; Chojiro Higuchi, and Akihiro Yamaguchi, both of Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,289

Claims priority, application Japan, Aug. 1, 1983, 58-139455; Mar. 13, 1984, 59-46529

Int. Cl.⁴ C07C *99/00*

U.S. Cl. 562—444 **5 Claims**

1. Process for producing a β-phenylserine, which comprises reacting glycine and a benzaldehyde in the presence of an alkali and then treating the reaction product with an acid, said reaction being carried out in a mixed solvent composed of water and a hydrophobic organic solvent selected from the group consisting of a hydrocarbon, a halogenated hydrocarbon, an alcohol, an ether, a ketone and an ester.

4,605,760

PREPARATION OF AN ENANTIOMER OF A SUBSTITUTED FLUORENYLOXYACETIC ACID

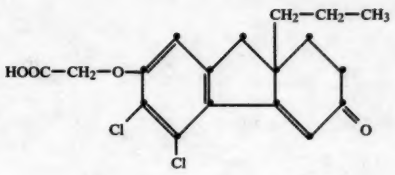
Apurba Bhattacharya, Rahway, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 16, 1985, Ser. No. 766,376

Int. Cl.⁴ C07C *69/94*

U.S. Cl. 562—461 **10 Claims**

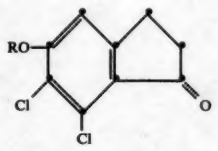
1. A process for preparing the (+) isomer of a compound of the formula:



I

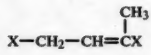
which comprises:

a. treating a compound of the formula:



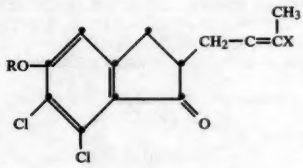
II

with



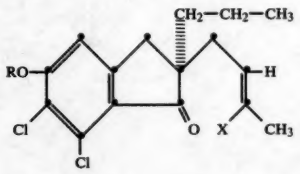
(IIa)

wherein X is Cl or Br and R is C_1–C_6-alkyl in a basic medium to obtain:



III

b. treating III with C_3H_7—X in the presence of a chiral catalyst to obtain:

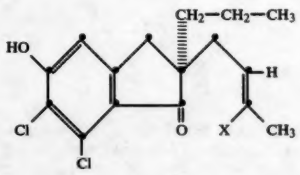


IV

rich in the (−) isomer;

c. crystallizing IV to obtain pure (−) isomer,

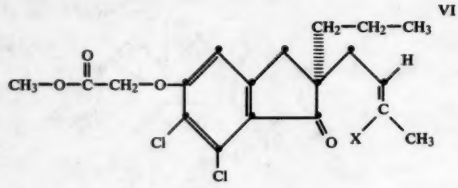
d. treating the IV isomer from (c) with $NaNO_2$ in an aprotic solvent or LiCl in N-methylpyrrolidinone to obtain:



V

e. alkylating V to obtain:

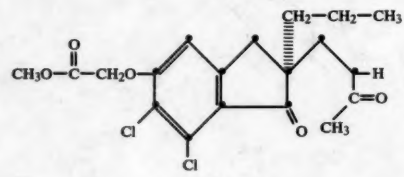
VI



and

f. treating VI with H_2SO_4/CH_2Cl_2 to obtain:

VII



and

g. treating VII with a base to obtain I.

4,605,761

PROCESS USING ACHIRAL CO-CATALYST PROMOTER FOR CHIRAL PHASE TRANSFER ALKYLATION PROCESS FOR AN ENANTIOMER OF A SUBSTITUTED FLUORENYLOXYACETIC ACID

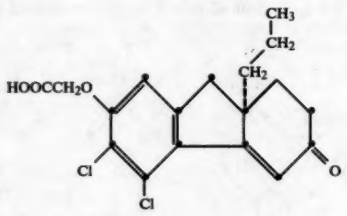
Ulf H. Dolling, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 6, 1985, Ser. No. 805,689

Int. Cl.[4] C07C *69/94*

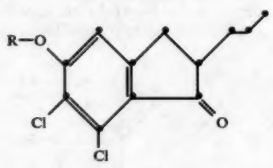
U.S. Cl. 562—461 **7 Claims**

1. The process for the preparation of the formula:

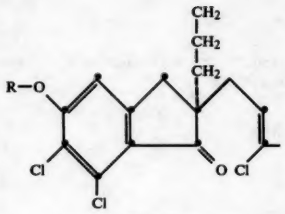


which comprises:

(a) treating a compound of the formula:



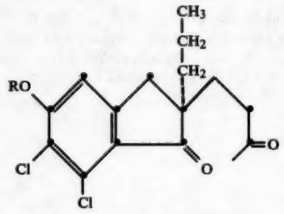
with 1,3-dichloro-2-butene under liquid-liquid base catalyzed phase transfer conditions in the presence of a chiral catalyst and an achiral, non-ionic surfactant co-catalyst to obtain a predominant amount of an enantiomer of the formula:



wherein R is a hydrocarbonyl radical selected from C_{1-6} alkyl and phenyl C_{1-6} alkyl;

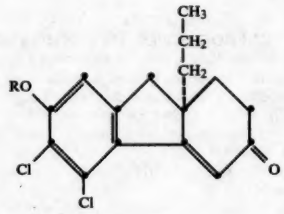
(b) treating said enantiomer with concentrated sulfuric acid and water at a temperature of 0°–25° to obtain a reaction mixture containing a dichlorodiketo enantiomer of the formula:

IV



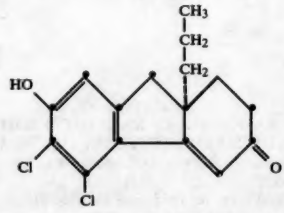
(c) raising the temperature of the reaction mixture to effect cyclization and production of a fluorenone compound of the formula:

V

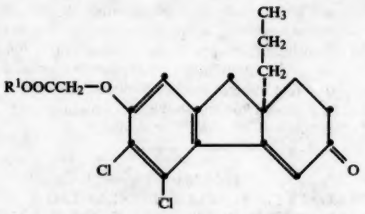


(d) treating said fluorenone compound with aluminum chloride to obtain a hydroxyfluorenone compound of the formula:

VI



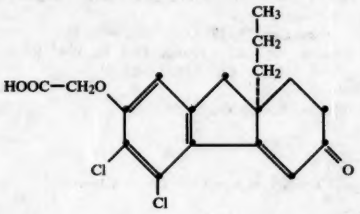
(e) treating said hydroxyfluorenone compound with a haloacetic acid ester in the presence of a base to obtain a fluorenyloxyacetic acid ester of the formula:



VII

wherein R^1 is loweralkyl C_1–C_5;

(f) hydrolyzing said ester to produce a fluorenyloxy acetic acid of the formula:



I

(g) and isolating said enantiomer I by crystallization.

4,605,762

DEPOLYMERIZATION OF CONDENSATION POLYMERS

Jorge W. Mandoki, Cujimalpa, Mexico, assignor to Celanese Mexicana S.A., Mexico City, Mexico

Continuation-in-part of Ser. No. 371,157, Apr. 23, 1982, abandoned. This application Dec. 21, 1983, Ser. No. 563,812

Int. Cl.⁴ C07C *51/487, 27/02, 85/26;* **C07D** *487/00, 210/00*

U.S. Cl. 562—483 **25 Claims**

1. A continuous process for the hydrolytic depolymerization of condensation polymers which comprises:

subjecting condensation polymer waste material selected from the group consisting of polyester polymer, polyamide polymer and polycarbonate polymer to aqueous hydrolysis in a hydrolysis zone at a temperature of between 200° C. and 300° C. and superatmospheric pressure of at least 15 atmospheres;

introducing high pressure steam into the lower portion of the hydrolysis zone underneath the level of the condensation polymer waste material; and

withdrawing an aqueous solution of the product(s) of the hydrolysis reaction from an upper portion of the hydrolysis zone.

4,605,763

PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID

Judy E. Kiefer; William V. Phillips, and Thomas E. Woodruff, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1984, Ser. No. 646,196

Int. Cl.⁴ C07C *51/42*

U.S. Cl. 562—487 **20 Claims**

1. In a process for the purification of crude terephthalic acid, said purification process comprising contacting said crude terephthalic acid with oxygen-containing gas at elevated temperature and pressure in the presence of a solvent containing at least one lower alkanoic acid and a catalyst system comprising cobalt, the improvement comprising employing in said catalyst system a bromine source and pyridine.

4,605,764

SUBSTITUTED ACETAMIDE DERIVATIVES WITH AN ANTIDOTE ACTION, ANTIDOTE COMPOSITIONS CONTAINING SUCH COMPOUNDS, SELECTIVE HERBICIDE COMPOSITIONS CONTAINING THESE ANTIDOTES AND A PROCESS FOR THE PREPARATION OF SUBSTITUTED ACETAMIDE DERIVATIVES

György Matolosy; Barna Bordás; Antal Gimesi; Magdolna Kovács neé Kálmán, and Márton Tüske, all of Budapest, Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

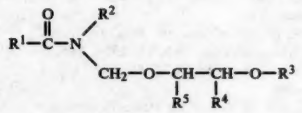
Filed Jul. 13, 1983, Ser. No. 513,215

Claims priority, application Hungary, Jul. 14, 1982, 2288/82

Int. Cl.⁴ C07C *103/127, 103/34*

U.S. Cl. 564—209 **2 Claims**

1. A process for the preparation of a compound of the formula (III)



(III)

wherein

R^1 stand for a halogenated alkyl group containing 1 to 2 carbon atoms, preferably for a dichloro- or dibromoalkyl group;

R^2 stands for a straight or branched alkyl group containing 1 to 6 carbon atoms, or an alkenyl group containing 2 to 6 carbon atoms;

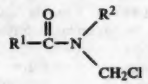
R^3 stands for an alkyl group containing 1 to 6 carbon atoms, an alkoxyalkyl group of altogether 2 to 6 carbon atoms, or a phenyl group;

R^3 and R^4 together may stand for a propylene or butylene group;

R^4 and R^5 stand independently from each other for hydrogen or a methyl group; or

R^4 and R^5 together may stand for a propylene or butylene group,

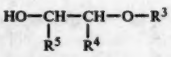
which comprises reacting an N-chloromethyl compound of the formula (IV),



(IV)

wherein

R^1 and R^2 are as defined above, with an alcohol of the formula (V)



(V)

wherein

R^3, R^4 and R^5 are as defined above.

4,605,765

NOVEL POLYAMINE

Akira Miyamoto; Katsuo Sato, and Masahiro Kurokawa, all of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

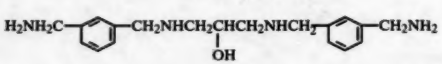
Division of Ser. No. 473,404, Mar. 8, 1983, abandoned. This application Oct. 29, 1984, Ser. No. 651,024

Claims priority, application Japan, Mar. 8, 1982, 57-36263

Int. Cl.[4] C07C *87/28*

U.S. Cl. 564—367 2 Claims

1. N,N'-Bis(3-aminomethylbenzyl)-2-hydroxytrimethylenediamine having the formula:



4,605,766

ALKYLATION PROCESS

Duane C. Hargis, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 564,749, Dec. 22, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,807

Int. Cl.[4] C07C *85/24*

U.S. Cl. 564—409 39 Claims

1. A process for alkylating an aromatic amine which comprises reacting at elevated temperature and in the presence of an iron oxide alkylation catalyst, an alkylatable aromatic amine with an ether co-reactive therewith whereby a portion of said ether alkylates the aromatic amine and a portion of said ether remains undecomposed.

4,605,767

PROCESS FOR THE PREPARATION OF 2,6-DICHLORO-4-NITROANILINE

Otto Arndt, Hofheim am Taunus, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 16, 1985, Ser. No. 734,972

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418495

Int. Cl.[4] C07C *85/24, 87/60*

U.S. Cl. 564—412 8 Claims

1. A process for the preparation of 2,6-dichloro-4-nitroaniline by chlorination of 4-nitroaniline with chlorine bleaching liquor in water using acids, which comprises chlorinating 1 mole of 4-nitroaniline in 3–6 moles of hydrochloric acid (HCl) or nitric acid (HNO_3) in the form of a dilute, aqueous acid in the presence of a dispersing agent which is stable under the reaction conditions, the chlorination initially being carried out at 5° to 10° C. and then at 15°–20° C. and, finally, after 90–95% of the 2-chloro-4-nitroaniline intermediately formed has been converted into 2,6-dichloro-4-nitroaniline, the temperature of the aqueous suspension being increased from 15°–20° C. to 70° C., without further addition of chlorine bleaching liquor, and then by post-chlorinating, by renewed addition of chlorine bleaching liquor, at temperatures between 20° and 70° C., bringing the pH of the aqueous suspension to 9.0 and filtering off the 2,6-dichloro-4-nitroaniline formed and washing it with dilute mineral acid.

5. A process for the preparation of substantially pure 2,6-dichloro-4nitroaniline by chlorinatin of 4-nitroaniline with chloring bleaching liquor in water using acids, which comprises chlorinating 1 mole of 4-nitroaniline in 3–6 mole of hydrochloric acid (HCl) or nitric acid (HNO_3) in the form of a dilute, aqueous acid in the presence of a dispersing agent which is stable under the reaction conditions, the chlorination initially being carried out at 5° to 10° C. and then at 15°–20° C. and, finally, after 90–95% of the 2-chloro-4-nitroaniline intermediately formed has been converted into 2,6-dichloro-4-nitroaniline, the temperature of the aqueous suspension being increased from 15°–20° C. to 70° C., without further addition of chlorine bleaching liquor, and then by post-chlorinating, by renewed addition of chlorine bleaching liquor, at temperatures between 20 ° and 70° C., bringing the pH of the aqueous sispension to 9.0 and filtering off the 2,6-dichloro-4-nitroaniline formed and washing it with dilute mineral acid to provide 2,6-dichloro-4-nitroaniline of a purity of 96% or above, and a melting point of 187°–191° C. and in a yield of 80% or above.

4,605,768

1-CYCLOALKYLAMINO-3-T-BUTYLAMINO-2-PROPANOLS, A METHOD OF PREPARING THE SAME, AND A METHOD OF USE THEREOF

Chantal Boyer, Le Pian Medoc; Jean C. Colleter, Blanquefort; Marie-Helene Creuzet, Bordeaux; Claude Feniou, Pessac; Michel Laguerre, Gradignan; Henri Pontagnier, Pessac, and Gisele Prat, Talence, all of France, assignors to Societe Cortial, Paris, France

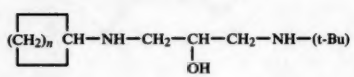
Filed Dec. 21, 1984, Ser. No. 684,949

Claims priority, application France, Dec. 22, 1983, 83 20748

Int. Cl.[4] C07C *87/32, 87/45*

U.S. Cl. 564—461 7 Claims

1. A compound having the formula (I):



(I)

wherein n is an integer between 7 and 11, inclusive; or the pharmaceutically acceptable salts thereof.

4,605,769

PREPARATION OF ALKANOLAMINE

Michael J. Green, Hedon, England, assignor to BP Chemicals Limited, London, England

Filed Jun. 12, 1985, Ser. No. 743,753

Claims priority, application United Kingdom, Jun. 21, 1984, 8415806

Int. Cl.[4] C07C *89/02, 85/02*

U.S. Cl. 564—477 12 Claims

1. A process for the preparation of an alkanolamine comprising reacting an alkylene oxide with either an amine or ammonia in the presence of an effective amount of a catalyst comprising a salt of a fluorosulphonic acid,

said fluorosulphonic acid being a compound of the formula RSO_3H where R is an alkyl, substituted alkyl, or aryl group, containing at least one fluorine atom adjacent to the sulphonic acid group, and

said amine having at least one hydrogen connected to the nitrogen atom.

4,605,770

NONCYCLIC POLYALKYLENE POLYAMINES BY THE REACTION OF AN ALKANOLAMINE COMPOUND AND AN ALKYLENEAMINE COMPOUND IN THE PRESENCE OF A GROUP IIA OR GROUP IIIB METAL ACID PHOSPHATE CATALYST

Michael E. Ford, Center Valley, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1983, Ser. No. 564,594

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.[4] C07C *85/06*

U.S. Cl. 564—479 40 Claims

1. A process for preparing predominantly noncyclic polyalkylene polyamines which comprises:

contacting an alkanolamine compound having an amino group and a primary or secondary hydroxy group with an

alkyleneamine compound having two amino groups in the presence of a catalytically effective amount of a catalyst consisting essentially of a Group IIA or Group IIIB metal acid phosphate at a temperature sufficient to effect the reaction between the alkanolamine compound and the alkyleneamine compound under a pressure sufficient to maintain the reaction mixture essentially in liquid phase.

4,605,771

PROCESS AND INSTALLATION FOR THE PRODUCTION OF AN ORGANIC SOLUTION OF A WATER-INSOLUBLE ORGANIC BASE

Léon Ninane; Claude Breton, both of Dombasle-sur-Meurthe, France, and Constant Guerdon, Kraainem, Belgium, assignors to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

Filed Apr. 26, 1984, Ser. No. 604,365
Claims priority, application France, Apr. 28, 1983, 83 07226
Int. Cl.[4] C07C *85/26, 87/06*
U.S. Cl. 564—497 **10 Claims**

1. Process for the production of an organic solution of a water-insoluble organic base comprising mixing together water, an organic solution of a water-immiscible chloride of an organic cation, and a basic reagent capable of decomposing the chloride of the organic cation to form the base, resulting in the formation of an organic solution phase containing the base and an aqueous phase containing a solid residue, separating the organic solution phase containing the base from the aqueous phase by difference in density, whereby an interface phase comprising an emulsion-like mixture of aqueous phase and organic solution phase containing suspended solid particles of said solid residue is formed between the organic phase and the aqueous phase, withdrawing at least a part of the interface phase which separates the organic solution phase and the aqueous phase and recycling the withdrawn interface phase to the mixture of the water, organic solution and the basic reagent.

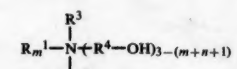
4,605,772

PROCESS FOR PREPARING N-ALKANE-N-ALKANOLAMINES

Nicholas Darby, Toronto, and Gordon C. Dunmore, Ft. Saskatchewan, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 685,529
Int. Cl.[4] C07C *91/04, 91/12, 91/10, 87/06*
U.S. Cl. 564—503 **15 Claims**

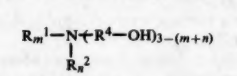
1. A method of producing an N-alkane-N-alkanolamine of the structure



(I)

wherein R^1, R^2, and R^3 are each independently hydrocarbon moieties having from 1 to 12 carbon atoms; each R^4 is independently a hydrocarbon moiety having 1 to 6 carbon atoms; and m and n are each independently 0, 1, or 2, provided that m and n are such that the nitrogen atom of (I) has a valence of 3; comprising

(a) contacting a compound of the structure



(II)

wherein R^1, R^2, R^4, m, and n are as defined above, with a haloalkane of the structure R^3X, wherein R^3 is as defined above; and X is a halogen;

(b) contacting the product of step (a) with a strong base; and

(c) deprotonating the product of step (b).

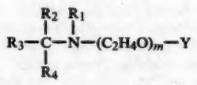
4,605,773

LOW-FOAMING, PH SENSITIVE, ALKYLAMINE POLYETHER SURFACE ACTIVE AGENTS AND METHODS FOR USING

James E. Maloney, Eagan, and James A. McDonell, St. Paul, both of Minn., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 406,885, Aug. 10, 1982. This application May 10, 1984, Ser. No. 608,775
Int. Cl.[4] C07C *93/04*
U.S. Cl. 564—505 **5 Claims**

1. A foam controllable, pH sensitive alkylamine polyether of the structure:



wherein

(a) R_1 is alkyl and R_2, R_3 and R_4 are alkyl or hydrogen, the total number of carbon atoms in $R_1+R_2+R_3+R_4$ falling in the range of 7 to 36;

(b) The $-(C_2H_4O)_m-$ segment must be a poly(oxyethylene) homogeneous chain or block polymer, m having an average value in the range of 5–13; and

(c) Y is a homogeneous poly(oxypropylene) chain block polymer, of the structure $-(C_3H_6O)_nH$, n having an average value in the range of 6–30.

4,605,774

PREPARATION OF BIS(4-HYDROXYPHENYL THIO)BENZENES

Arthur L. Baron, and Parameswar Sivaramakrishnan, both of New Martinsville, W. Va., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Sep. 18, 1978, Ser. No. 943,517
Int. Cl.[4] C07C *148/00*
U.S. Cl. 568—48 **2 Claims**

1. A process for the production of the monomer of the structural formula

which comprises

(a) reacting 4-mercaptophenol with p-dibromobenzene in the presence of potassium carbonate and dimethyl formamide to form an impure product comprising bis-(4-hydroxyphenyl thio)-benzene and 4'-bromo-4-hydroxydiphenyl sulfide and

(b) removing 4'-bromo-4-hydroxydiphenyl sulfide from said impure product by extraction with cyclohexane and recovering said monomer in purified form.

4,605,775

SYNTHESIS OF HIGHER KETONES

David J. Elliott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 22, 1985, Ser. No. 725,843
Int. Cl.[4] C07C *45/72*
U.S. Cl. 568—387 **21 Claims**

1. A process for preparing higher ketones comprising the step of contacting a mixture comprising

(a) at least one ketone selected from the group of ketones having from 3 to 5 carbon atoms per molecule, and

(b) carbon monoxide

with a catalyst composition comprising copper (II) oxide and

zinc oxide, under such conditions as to form a reaction product comprising at least one higher ketone having at least one carbon atom per molecule more than the feed ketone in said mixture.

4,605,776

PROCESS FOR PRODUCING ACETONE

Taiji Kamiguchi; Mutsuo Yamada; Yoshijiro Arikawa; Takanori Kuwahara; Hirotoshi Tanimoto; Yasuyuki Nishimura, and Hiroyuki Kaku, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 694,099

Claims priority, application Japan, Jan. 27, 1984, 59-012144; Mar. 8, 1984, 59-044469

Int. Cl.⁴ C07C *45/35*

U.S. Cl. 568—401 **19 Claims**

1. A process for producting acetone by oxygen-oxidizing propylene in the presence of a metal complex catalyst, which process comprises employing a composite catalyst containing as the metal complex catalyst, a first complex (Mm Xn.Ll) capable of forming an oxygen complex by coordination of the complex with oxygen and a second complex (m'm' Xn'.L'l' Ll) capable of forming a propylene complex by coordination of the complex with propylene, wherein M is a transition metal belonging to group I, groups IV–VII and the iron group in group VIII of the Periodic Table; X, and anion; L, an organic phosphorus compound selected from the group consisting of triphenylphosphine oxide, hexamethylphosphoramide, mono-, di- and triesters formed by the reaction of phosphoric acid with methanol and ethanol, dimethyl methylphosphonate, methyl dimethylphosphinate, mono-, di- and triesters formed by the reaction of phosphorus acid with methanol and ethanol, phenylphosphinous acid esters, dimethylphosphinic acid esters, triethylphosphine and triphenylphosphine; M', a transition metal belonging to the platinum group in group VIII of the Periodic Table; L', a coordinating compound selected from the group consisting of acetonitrile, propionitrile, benzonitrile, tolunitrile, fluorinated toluene, benzotrifluoride; m, m', n and n', each a number determined by valences of the above transition metals and the above anion; and l and l', each the number of ligands.

4,605,777

METHOD OF MANUFACTURING O- AND P-NITROBENZALDEHYDE

Boris Holm, Karlskoga, Sweden, assignor to Nobel Kemi AB, Karlskoga, Sweden

Filed Jun. 12, 1985, Ser. No. 744,143

Claims priority, application Sweden, Jun. 13, 1984, 8403147

Int. Cl.⁴ C07C *79/36*

U.S. Cl. 568—424 **11 Claims**

1. Method of manufacturing o- and p-nitrobenzaldehyde from o-chloro or o-bromobenzaldehyde and p-chloro or p-bromobenzaldehyde, respectively, characterized in that the chlorine or bromine substituent of the starting substance is exchanged for a nitro group through a nucleophilic aromatic substitution reaction performed in an organic solvent with a nitrite salt selected from the group of potassium nitrite and sodium nitrite and in the presence of a copper salt as a catalyst.

4,605,778

PROCESS FOR THE PREPARATION OF AROMATIC MUSKS

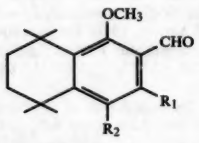
Brian J. Willis, Ramsey, N.J., and Teodosij Zazula, Rego Park, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Division of Ser. No. 494,674, May 13, 1983, Pat. No. 4,476,040, which is a continuation-in-part of Ser. No. 394,847, Jul. 2, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,990

Int. Cl.⁴ C07C *45/00, 45/90*

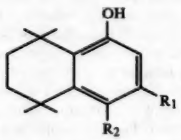
U.S. Cl. 568—433 **10 Claims**

1. The process of preparing compounds having the structure:

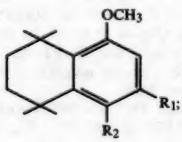


wherein R_1 and R_2 are hydrogen, methyl, or ethyl, which comprises:

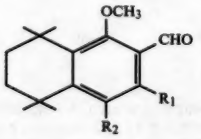
a. methylating compounds having the structure:



wherein R_1 and R_2 are hydrogen, methyl, or ethyl to produce methoxy derivatives having the structure:



b. formylating the methoxy derivatives to prepare compounds having the structure:



and

c. recovering said compounds.

4,605,779

METHOD FOR THE PRODUCTION OF TIGLIC ALDEHYDE

Teruo Matsuda, Ehime; Shinkichi Shimizu, Osaka, and Masaaki Iwasa, Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

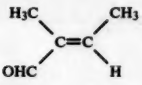
Filed Jul. 24, 1985, Ser. No. 758,017

Claims priority, application Japan, Jul. 24, 1984, 59-154635

Int. Cl.⁴ C07C *45/67*

U.S. Cl. 568—450 **3 Claims**

1. A process for producing tiglic aldehyde of the formula:



which comprises isomerizing ethylacrolein at a temperature in the range of from 50° C. to 150° C. and in the presence of hydrogen gas in an amount of from 0 to 1 mole per mole of said ethylacrolein and at least one hydrogenating catalyst selected from the group consisting of palladium, platinum, rhodium and ruthenium.

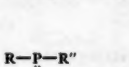
4,605,780

REACTIVATION OF RHODIUM COMPLEX HYDROFORMYLATION CATALYSTS

Ernst Billig, Charleston, and David B. Stanton, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 24, 1980, Ser. No. 190,280
Int. Cl.[4] C07C *45/49*
U.S. Cl. 568—454 14 Claims

1. A process for converting alkyl substituted phosphine by-product to its corresponding phosphine oxide and improving the activity of a rhodium complex hydroformylation catalyst contained in a hydroformylation reaction medium, which catalyst has become partially deactivated from its employment in a continous hydroformylation reaction to produce aldehyde products by reacting an olefinic compound, carbon monoxide and hydrogen in the presence of a hydroformylation reaction medium contained in a reaction vessel, said process comprising stopping the hydroformylation reaction being conducted in said vessel and treating, under nonhydroformylation conditions, all or a proportionate part of the hydroformylation reaction medium derived therefrom which consists essentially of from about 5 to about 60 percent by weight of aldehyde products, from about 10 to about 70 percent by weight of higher boiling aldehyde condensation by-products, a partially deactivated soluble rhodium complex hydroformylation catalyst in an amount sufficient to provide a rhodium concentration in said derived medium of from about 25 ppm to about 1200 ppm of rhodium calculated as free metal, from about 0.1 to about 5 percent by weight of free alkyl substituted phosphite by-product of the formula



(I)

wherein R is an alkyl radical, R′ is an alkyl or aryl radical and R″ is an aryl radical, and from about 5 to about 25 percent by weight of free triarylphosphine ligand, said above mentioned weight percentages being based on the total weight of said derived hydroformylation reaction medium, with a sufficient amount of oxygen or oxygen containing gas for a sufficient period of time, at a temperature of from about 20° C. to about 80° C., until at least about 50 percent by weight of said alkyl substituted phosphine has been converted to its alkyl substituted phosphine oxide, while converting less than about 25 percent by weight of said triarylphosphine ligand to its triarylphosphine oxide.

4,605,781

PRODUCTION OF 2-METHYLBUTANAL

Kwoliang D. Tau, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

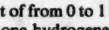
Filed Sep. 3, 1985, Ser. No. 772,219
Int. Cl.[4] C07C *45/50*
U.S. Cl. 568—454 14 Claims

1. A continuous process for selectively producing 2-methylbutanal by selectively hydroformylating butene-2 which process comprises contacting, on a continuous process basis, in a hydroformylation zone:

(a) said butene-2;

(b) with carbon monoxide and hydrogen in the mole ratio of hydrogen to carbon monoxide within the range of 1/1 to 10/1;

(c) in the presence of an halogen-free rhodium complex catalyst of the empirical formula:



I

wherein "Rh" is rhodium, "H" is hydrogen, "CO" carbon monoxide and "L" is a triorganophosphine ligand, and wherein m is 1 or 3, n is from 1 to 3, and p is 1 or 2, the sum of m, n and p being from 4 to 6 said triorganophosphine ligand being selected from the group consisting of trialkylphosphines, tricycloalkylphosphines, wherein each of the three alkyl, including cycloalkyl, groups are alike or different, and each contains from 3 to 10 carbon atoms and wherein said triorganophosphine ligand has a cone angle within the range of 159 to 171 degrees and wherein the frequency of the A_1 carbonyl mode of the nickel tricarbonyl complex of the ligand, $Ni(CO)_3L$, in dichloromethane is within the range of 2056.1 to 2061.1 cm^{-1};

(d) wherein the triorganophosphorus ligand is not in substantial excess such that there is not any substantial amount of free triorganophosphorus ligand;

(e) at a pressure within the range of about 6 to 30 atmospheres absolute;

(f) at a temperature within the range of about 80° C. to 150° C.;

(g) so as to produce hydroformylation products of said butene-2 wherein the mole ratio of 2-methylbutanal to other oxygenated products is at least 4/1; and continuously recovering from said hydroformylation zone said hydroformylation products having a said mole ratio of 2-methylbutanal to other oxygenated products of at least 4/1.

4,605,782

PROCESS FOR THE PREPARATION OF AN ALDEHYDE

Christopher S. John, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1985, Ser. No. 762,647
Claims priority, application United Kingdom, Oct. 15, 1984, 8426006
Int. Cl.[4] C07C *45/41*
U.S. Cl. 568—484 13 Claims

1. A process for the preparation of an aldehyde from an aromatic carboxylic acid or an aliphatic carboxylic acid having at most one α-hydrogen atom in the acyl group, which process comprises contacting the carboxylic acid at elevated temperature with hydrogen in the presence of a catalyst consisting essentially of at least 25%w of iron oxide expressed as Fe_2O_3, calculated on the total catalyst, with the remainder being binding materials.

4,605,783

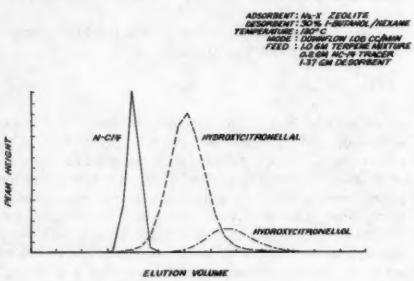
PROCESS FOR SEPARATING MONOTERPENES

Hermann A. Zinnen, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 21, 1985, Ser. No. 714,404
Int. Cl.[4] C07C *45/78, 45/79*
U.S. Cl. 568—492 12 Claims

1. A process for separating monoterpene alcohols and aldehydes or ketones of monoterpenes from a feed mixture comprising an aldehyde and/or ketone of a monoterpene and an alcohol of a monoterpene, said process comprising: contacting said mixture at adsorption conditions which include a temperature of from about 25° C. to about 200° C. and a pressure sufficient to maintain liquid phase with an X-type zeolite containing sodium or potassium ions at cation exchange sites thereby selectively adsorbing said monoterpene alcohol to the

substantial exclusion of said monoterpene ketone and aldehyde; recovering a nonadsorbed raffinate component substantially free of said monoterpene alcohol; desorbing said selectively adsorbed component with a desorbed material comprising alcohols, ketones, paraffinic hydrocarbons or combinations thereof at desorption conditions in the same range as said adsorption conditions and recovering an adsorbed component substantially free of said monoterpene aldehyde or ketone.



4,605,784

PROCESS FOR THE PREPARATION OF ETHER-CONTAINING CHLORIDES

Robert J. I. Eubanks, and James G. Pacifici, both of Batesville, Ark., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 682,823, Dec. 19, 1984, abandoned, which is a continuation of Ser. No. 536,112, Sep. 26, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,565

Int. Cl.⁴ C07C *41/22, 41/18*

U.S. Cl. 568—614 **9 Claims**

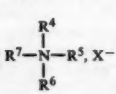
1. A process for the preparation of a compound having the formula

$$R^2(OR^3)_nCl \qquad III$$

by contacting a chlorinating agent selected from the group consisting of phosphorous pentachloride, phosphorous oxychloride and thionyl chloride with a compound of the formula

$$R^1(OR^3)_nOH \qquad I$$

in the presence of a catalytic amount of a quaternary ammonium salt of the formula



II

wherein

n is an integer of from 1 to 20,

R^1 is alkyl of from 1 to 8 carbon atoms, aryl of from 6 to 10 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 10 carbon atoms, $HOCH_2CH_2$— or $ClCH_2CH_2$—;

R^2 is alkyl of from 1 to 8 carbon atoms, aryl of from 6 to 10 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 10 carbon atoms, or $ClCH_2CH_2$—, wherein said R^1 of the reactant corresponds to said R^2 of the product except that said R^2 is $ClCH_2CH_2$— when R^1 is $HOCH_2CH_2$—;

R^3 is an alkylene radical of from 2 to 3 carbon atoms;

R^4, R^5, R^6, and R^7 are each independently selected from alkyl of from 1 to 18 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 18 carbon atoms, and aryl of from 6 to 18 carbon atoms and X is a halide, hydrogen sulfate or hydroxide anion;

the reaction being conducted at a temperature of about 25° to about 90° C.

4,605,785

1,1-DIPHENYLPROPANOL DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Toth; Jozsef Torley; Eva Palosi; Szabolcs Szeberenyi; Laszló Szporny; Sandor Gorog, and Istvan Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

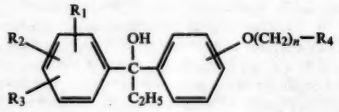
Filed Dec. 27, 1983, Ser. No. 565,838

Claims priority, application Hungary, Dec. 28, 1982, 4181/82

Int. Cl.⁴ C07C *43/20*

U.S. Cl. 568—649 **6 Claims**

1. A compound of the Formula (I)



wherein

R_1 and R_2 independently represent hydrogen, halogen, trihalomethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R_3 is halogen, trihalomethyl, C_1–C_4 alkyl, or C_1–C_4 alkoxy;

R_4 is phenyl which can be substituted by one or more identical or different substituents selected from the group consisting of halogen, trihalomethyl, alkyl, alkoxy, cyano, nitro, amino, alkylamino, dialkylamino, hydroxyl, carboxyl, and substituted carboxyl; and

n is 1, 2, 3, 4 or 5.

4,605,786

PERFLUORO ETHER COMPOUND CONTAINING PERFLUOROCYCLOALKYL MOIETY

Kazumasa Yokoyama, Toyonaka; Yoshihisa Inoue, Kyoto; Taizo Ono, Tokyo; Chikara Fukaya, Osaka; Yoshio Arakawa, Suita; Youichiro Naito, Hirakata; Koichi Yamauchi, Sakai, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

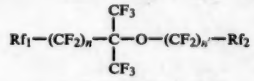
Filed Dec. 20, 1983, Ser. No. 563,436

Claims priority, application Japan, Dec. 21, 1982, 57-225226

Int. Cl.⁴ C07C *43/12*

U.S. Cl. 568—669 **6 Claims**

1. A perfluoro ether compound represented by the formula



(I)

wherein Rf_1 and Rf_2 are different from each other and are selected from a C_1 to C_3 perfluoroalkyl group, which may be interrupted by an oxygen atom, and a C_5–C_7 perfluorocycloalkyl group, and n and n' are zero or an integer of 1; provided that one of Rf_1 and Rf_2 is C_5–C_7 perfluorocycloalkyl group and the the total number of carbon atoms is 9–11 inclusive.

4,605,787

PROCESS FOR THE PREPARATION OF ALKYL TERT-ALKYL ETHERS

Pochen Chu, West Deptford, and Guenter H. Kuehl, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 641,412, Aug. 16, 1984, abandoned, which is a continuation of Ser. No. 532,939, Sep. 16, 1983, abandoned, which is a continuation of Ser. No. 232,800, Feb. 9, 1981, abandoned, which is a continuation of Ser. No. 121,759, Feb. 15, 1980, abandoned. This application Jun. 10, 1985, Ser. No. 742,375

Int. Cl.[4] C07C *41/05*

U.S. Cl. 568—697 5 Claims

1. A process for the preparation of methyl tert-butyl ether which comprises reacting in vapor phase at a temperature between 170°–220° F. methanol with isobutylene in the presence of a ZSM-5 or ZSM-11 acidic zeolite catalyst characterized by having a constraint index of from about 1 to 12 and a silica/alumina ratio of at least about 5.

4,605,788

CATALYTIC PREPARATION OF DIMETHYL ETHER

Loren D. Brake, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 702,842, Feb. 19, 1985, abandoned, which is a continuation of Ser. No. 573,598, Jan. 26, 1984, abandoned, which is a continuation of Ser. No. 394,120, Jul. 1, 1982, abandoned. This application Aug. 26, 1985, Ser. No. 768,936

Int. Cl.[4] C07L *41/04*

U.S. Cl. 568—698 3 Claims

1. In the preparation of dimethyl ether by the catalytic dehydration of methanol, the improvement which comprises using as the catalyst an aluminosilicate which consists of, by weight 1–20% of silica and 80–99% alumina, said aluminosilicate being a calcined coprecipitation product.

4,605,789

PROCESS FOR PREPARING SPIROBIINDANOLS

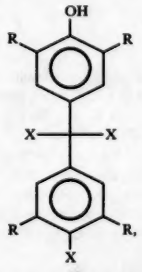
H. Craig Silvis, and Ted A. Morgan, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1985, Ser. No. 812,616

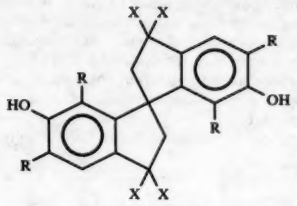
Int. Cl.[4] C07C *39/17*

U.S. Cl. 568—721 4 Claims

1. A process for making spirobiindanols which comprises refluxing the corresponding alkylaryl bisphenol derivative, having the general formula



in the presence of a dry heterogeneous acidic ion exchange resin as the catalyst in an aromatic hydrocarbon solvent, wherein said spirobiindanols have the general formula



wherein R is selected from the group consisting of hydrogen, hydrocarbon radicals, halogen radicals and mixtures thereof, and X is a linear alkyl hydrocarbon radical with a carbon chain length of 1 to 4.

4,605,790

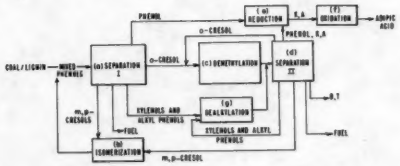
PHENOL FROM COAL AND BIOMASS

Paul W. Wojtkowski, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1985, Ser. No. 736,385

Int. Cl.[4] C07C *37/68*

U.S. Cl. 568—750 18 Claims



1. Process for preparing phenol from mixed phenols, which process comprises:

(a) separating the mixed phenols into at least phenol and o- and m- and/or p-cresols;

(b) isomerizing m- and/or p-cresols from (a) to o-cresol in a first vessel in the presence of an alumino-silicate zeolite catalyst; and

(c) demethylating o-cresol from (a) and (b) to phenol in a second vessel in the presence of hydrogen and a catalyst consisting essentially of nickel and silica and/or Kieselguhr having a Ni/Si gram atomic ratio of about 0.2 to about 20 at a temperature of about 200° C. to about 450° C.

4,605,791

PROCESS FOR PURIFICATION OF TECHNICAL GRADE PENTACHLOROPHENOL

Toyozo Yonezawa, Minami, Japan, assignor to Yonezawa Chemical Industry Co., Ltd., Kyoto, Japan

Filed Jun. 7, 1985, Ser. No. 743,471

Int. Cl.[4] C07C *37/68*

U.S. Cl. 568—755 24 Claims

1. A process for purification of technical grade pentachlorophenol which comprises:

immersing said technical grade pentachlorophenol in an aqueous mixture selected from the group consisting of an aqueous solution and an aqueous suspension of a member selected from the group consisting of sodium bicarbonate, potassium bicarbonate, ammonium carbonate, ammonia, and calcium carbonate;

separating an insoluble portion from dissolved material in the resultant mixture;

dissolving said insoluble portion in a member selected from the group consisting of an aqueous solution of sodium carbonate, an aqueous solution of potassium carbonate,

and a hot aqueous solution of an alkaline substance which is capable of dissolving pentachlorophenol at 90°–100° C.;
contacting the resulting solution with active charcoal;
separating said active charcoal with adsorbed material thereon from said resulting solution;
adding copper sulfate to the thus obtained solution;
separating and removing the resultant deposit from said solution; and
recovering pentachlorophenol from the finally obtained solution.

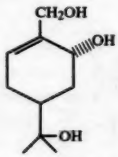
4,605,792

DERIVATIVE OF (−)-6,6-DIMETHYLBICYCLO[3.3.1]EPT-2-ENE-2-METHANOL HAVING MUCOSECRETOLYTIC ACTIVITY, A PROCESS FOR ITS PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Camillo Corvi Mora, Piacenza, Italy, assignor to Camillo Corvi S.p.A., Italy

Filed Jun. 7, 1985, Ser. No. 742,574
Claims priority, application Italy, Aug. 8, 1984, 22258 A/84
Int. Cl.⁴ C07C *35/18*
U.S. Cl. 568—823 **3 Claims**

1. A process for the preparation of a compound of formula (I)



characterized by the epoxidation of (−)-6,6-dimethylbicyclo[3.3.1]ept-2-ene-methanol in an anhydrous methylene chloride medium free from ethanol at a temperature of 5° to 10° C. in the presence of anhydrous sodium carbonate, by peracetic acid in a 40% acetic solution; the pure epoxide, as obtained upon separation from the salts, is subjected to hydration at a temperature from 1° to 20° C. in an weakly acid aqueous medium, extracted with ethyl acetate in the presence of a sodium chloride solution, and concentration of the organic phase, whereby the compound of formula (I), in crystalline form, is obtained.

4,605,793

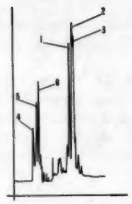
METHYL SUBSTITUTED PINYL OXOPENTENES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Robin K. Wolff, Point Pleasant; Richard M. Boden, Ocean, and Takao Yoshida, West Long Branch, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

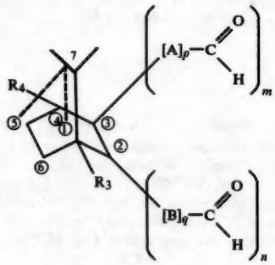
Division of Ser. No. 582,795, Feb. 23, 1984, Pat. No. 4,506,104, which is a division of Ser. No. 496,651, May 20, 1983, Pat. No. 4,510,340, which is a continuation-in-part of Ser. No. 396,485, Jul. 8, 1982, Pat. No. 4,424,378, which is a continuation-in-part of Ser. No. 362,237, Mar. 26, 1982, Pat. No. 4,428,387. This application Jul. 13, 1984, Ser. No. 630,727
The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.
Int. Cl.⁴ C07C *35/22*
U.S. Cl. 568—820 **2 Claims**

1. A process for preparing at least one secondary alcohol comprising the steps of:

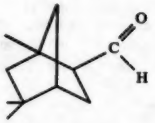
(a) reacting alpha pinene or beta pinene with a mixture of carbon monoxide and hydrogen in the presence of a hydroformylation catalyst in order to produce at least one compound defined according to the structure:



GLC PROFILE FOR EXAMPLE II.



or the compound having the structure:



wherein in the mixture one of the dashed lines at the 7–5 or 7–4 positions represents a carbon-carbon single bond and the other of the dashed lines at the 7–5 or 7–4 position represents no bond; wherein one of R_3 or R_4 represents hydrogen and the other of R_3 or R_4 represents hydrogen or methyl; wherein m=0 or 1 and n=0 or 1 with the sum of m+n being equal to 1; wherein A and B each represents methylene defined according to the structure:

wherein p=0 or 1 and q=0 or 1 with the provisos that:

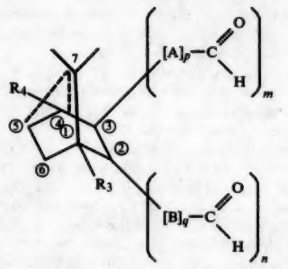
(i) when the dashed line at the 7–5 position is a carbon-carbon single bond, then R_3 and R_4 are both hydrogen, m is 0, n is 1 and q is 1;

(ii) when one of R_3 or R_4 is methyl and the other of R_3 or R_4 is hydrogen, then p and q are both 0;

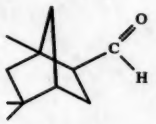
(iii) when R_3 is methyl, then R_4 is hydrogen and the dashed line at the 7–5 position or the dashed line at the 7–4 position is carbon-carbon single bond; and m is 0; n is 1 and q is 0;

(iv) when R_4 is methyl and R_3 is hydrogen, then n is 0 and m is 1 and p is 0 and one of the dashed lines at the 7–5 position or the 7–4 position is a carbon-carbon single bond,

(b) reacting the compound having the structure:



or the compound having the structure:



with methyl ethyl ketone in the presence of a basic catalyst; and

(c) reacting the resulting product with a reducing agent selected from the group consisting of alkali metal borohydrides and lithium aluminum hydride.

4,605,794

SORBITOL, PROCESS FOR ITS PREPARATION, AND USE THEREOF

Friedrich Reiff, Seeheim; Hartmut Härtner, Mühltal; Arno Basedow, Bad Vilbel; Hans-Wolfgang Hugenbusch, Höchst; Peter C. Schmidt, Marburg, and Hans Bardonner, Bad König, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 558,865, Dec. 7, 1983, Pat. No. 4,507,511. This application Jan. 23, 1985, Ser. No. 694,184

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245170

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.[4] C07C *29/76, 31/26*

U.S. Cl. 568—852 17 Claims

1. A process for producing a modified sorbitol-mannitol composition having improved tableting properties, comprising the step of spray drying a concentrated aqueous solution of sorbitol having no more than 2% impurities other than mannitol, and containing up to 15% by weight of mannitol relative to the weight of the sorbitol, at a drying gas temperature of 140°–170° C., under such conditions that the resultant spray dried sorbitol/mannitol composition has a moisture content of less than 1% by weight.

2. The modified sorbitol/mannitol composition produced by the process of claim 1.

4,605,795

CONTINUOUS PROCESS FOR THE PRODUCTION OF PENTANEDIOL-1,2

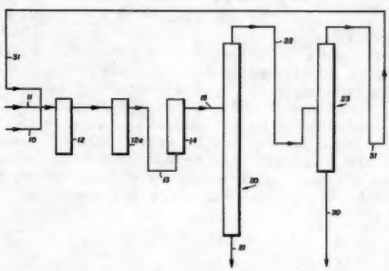
Rainer Siegmeier, Frankfurt; Günter Prescher, Hanau; Helmut Maurer, Rodenbach, and Günter Hering, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 15, 1985, Ser. No. 798,798

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1984, 3442937

Int. Cl.[4] C07C *29/00, 31/20*

U.S. Cl. 568—867 20 Claims



1. A continuous process for the production of pentanediol starting from pentene, oxidizing it to pentene oxide-1,2 using perpropionic acid and saponification of the epoxide with water at moderate temperature and moderate pressure comprising in a first step reacting pentene with a solution of perpropionic acid or a mixture of perpropionic acid and propionic acid in benzene at a mole ratio of pentene to perpropionic acid of 0.5 to 5:1 at a temperature of 20° to 110° C. and a pressure of 1 to 10 bar, fractionally distilling the epoxidation mixture in a fractionating column, returning the most volatile fraction, which consists chiefly of pentene, into the epoxidation with perpropionic acid solution, supplying the intermediately volatile fraction, which consists chiefly of pentene oxide and benzene, into the middle of a saponification column, in a second step saponifying it there with a sufficient amount of water to saponify the pentene oxide and in the presence of an acid catalyst at 30° to 150° C. and at 1 to 5 bar, withdrawing overhead a benzene-water mixture, separating this mixture into water and benzene, returning the separated water to the saponification column, at the bottom of the saponification column drawing off pentanediol-1,2 in aqueous acid, and withdrawing the least volatile fraction from the bottom of the fractionating column.

4,605,796

PROCESS FOR PRODUCING ETHANOL

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Toshiyasu Watanabe, and Natsuko Wakui, all of Niigata, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,335

Claims priority, application Japan, Dec. 26, 1983, 58-244172

Int. Cl.[4] C07C *29/00, 31/08*

U.S. Cl. 568—902 9 Claims

1. A process for producing ethanol which comprises reacting methanol, carbon monoxide, and hydrogen in the presence of a catalyst consisting of:

(a) cobalt or a cobalt compound selected from the group consisting of cobalt carbonyls, dicobalt octacarbonyl, cobalt hydride tetracarbonyl, cobalt hydroxide, cobalt carbonate, basic cobalt carbonate, cobaltocene, and cobalt acetyle acetonate;

(b) tertiary phosphine selected from the group consisting of tri-n-butyl phosphine, triphenyl phosphine, tri-p-tolyl-

phosphine, tricyclohexyl phosphine; and a promoter consisting of an aromatic acid, or cobalt salt, or ester thereof, selected from the group consisting of benzoic acid, o-toluic acid, m-toluic acid, p-toluic acid, phthalic acid, terephthalic acid, isophthalic acid, trimellitic acid, and trimesic acid.

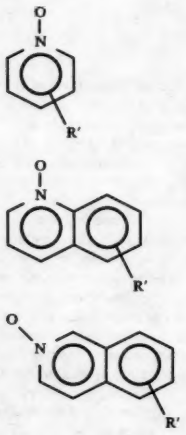
4,605,797

HYDROGENATION CATALYSTS AND SELECTIVE HYDROGENATION THEREWITH

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1984, Ser. No. 684,399
Int. Cl.[4] C07C *17/00*
U.S. Cl. 570—101 **11 Claims**

1. A process for the selective conversion of an acetylenic compound to a cis-olefinic compound which comprises contacting said acetylenic compound under hydrogenation conditions with hydrogen and a catalyst consisting essentially of elemental palladium supported on calcium carbonate with lead acetate and about 1–20 parts by weight per part of elemental palladium of an aromatic amine oxide; wherein said aromatic amine oxide has from about 5 to about 18 carbon atoms per molecule and is selected from the group consisting of:



and mixtures of any two or more thereof; wherein R′ is H or C_1–C_4 alkyl.

4,605,798

CONTINUOUS PROCESS FOR THE GASEOUS-PHASE PREPARATION OF TRICHLOROTRIFLUOROETHANE, DICHLOROTETRAFLUOROETHANE AND MONOCHLOROPENTAFLUOROETHANE IN CONTROLLED PROPORTIONS

Michel Abel, Pierre-Benite; Francois Fine, St. Laurent de Mure; Louis Foulletier, Oullins, and Yvan Verot, Ecully, all of France, assignors to PCUK Products Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 25, 1981, Ser. No. 324,823
Claims priority, application France, Dec. 31, 1980, 80 27865
Int. Cl.[4] C07C *17/00*
U.S. Cl. 570—164 **9 Claims**

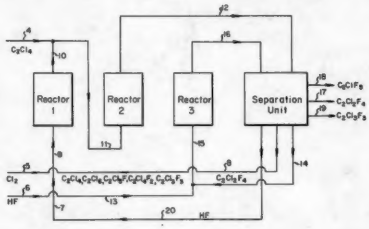
1. A continuous catalytic gaseous-phase process for the preparation of trichlorotrifluoroethane, dichlorotetrafluoroethane and monochloropentafluoroethane, in predetermined proportions, from tetrachloroethylene, chlorine and hydrofluoric acid comprising the steps of:

(a) reacting a mixture of chlorine, hydrofluoric acid and recycled products comprising tetrachloroethylene, hexachloroethane, pentachlorofluoroethane, tetrachlorodifluoroethane and trichlorodifluoroethane to produce a molar ratio of chlorine to recycled tetrachloroethylene of between about 1.1 and 5.0, in the gaseous phase in a first chlorination-fluorination reaction zone:

(b) mixing the gases leaving the first chlorination-fluorination reaction zone with fresh tetrachloroethylene to produce a molar ratio of chlorine to fresh tetrachloroethylene of between about 0.95 and 1.05;

(c) further reacting the effluent gases from the first chlorination-fluorination reaction zone with fresh tetrachloroethylene in a second gaseous-phase chlorination-fluorination reaction zone maintained at a lower temperature;

(d) feeding the effluents from the second reaction zone into a separation unit where the desired amounts of trichlorotrifluoroethane and dichlorotetrafluoroethane are extracted and from which excess dichlorotetrafluoroethane is sent to a fluorination-dismutation reaction zone;



(e) reacting in the fluorination-dismutation reaction zone a mixture of hydrofluoric acid and dichlorotetrafluoroethane that has been recycled from the separation unit, in a molar ratio of between about 0.1 and 1 to produce chloropentafluoroethane;

(f) sending the effluents from the fluorination-dismutation reaction zone into the separation unit;

(g) treating the gaseous products in the separation unti to recover the unused hydrofluoric acid and extract predetermined quantities of chloropentafluoroethane, dichlorotetrafluoroethane and trichlorotrifluoroethane;

(h) recycling the untransformed tetrachloroethylene, hexachloroethane, pentachlorofluoroethane, tetrachlorodifluoroethane and the excess trichlorotrifluoroethane to the first reaction zone; and

(i) recycling the excess dichlorotetrafluoroethane to the fluorination-dismutation reaction zone.

4,605,799

PROCESS FOR SEPARATING A HALOGENATED TOLUENE ISOMER

Kishio Miwa; Kuniyuki Tada, both of Kamakura, and Takehisa Inoue, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

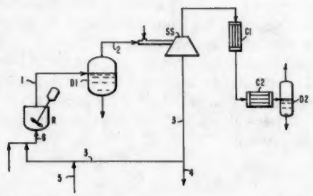
Filed Jul. 29, 1981, Ser. No. 288,132
Claims priority, application Japan, Aug. 13, 1980, 55-110395; Nov. 27, 1980, 55-165821
Int. Cl.[4] C07C *17/38*
U.S. Cl. 570—211 **8 Claims**

1. In an adsorptive-separation process for recovering the p-isomer from a mixture of monohalogenated toluene isomers containing the p-isomer and at least one other isomer, the improvement characterized by using as an adsorbent a Y type zeolite containing potassium ion and a desorbent containing at least one member selected from the group consisting of 3,4-dihalotoluene, 4-haloorthoxylene and a monocyclic alkyl aromatic hydrocarbon with one to four C_1–C_3 alkyl groups substituted onto the benzene ring whereby the p-isomer is selectively adsorbed and separated from said mixture.

4,605,800
PROCESS FOR THE MANUFACTURE OF CHLOROPRENE

Joseph F. Englert, Jr., La Place, La.; Louis J. Maurin, III, and Clare A. Stewart, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1983, Ser. No. 458,554
Int. Cl.[4] C07C *17/34*
U.S. Cl. 570—228 6 Claims



1. In a continuous process for manufacturing chloroprene by the dehydrochlorination of 3,4-dichlorobutene-1 with aqueous alkali in the presence of a quaternary ammonium compound catalyst in one or more reactors,

the improvement of separating the crude dehydrochlorination product into the aqueous phase and the organic phase, steam-stripping the organic phase at a temperature of at most about 80° C. to recover the dehydrochlorination product, discarding a small portion of the steam-stripping heels, and recirculating the remainder of the steam-stripping heels to the dehydrochlorination reaction.

4,605,801
MOLECULAR SIEVES AS CATALYSTS FOR PREPARATION OF 1,1,2-TRICHLOROETHANE

Roger L. Juhl; Mark S. Johnson, and Thomas E. Morris, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 29, 1982, Ser. No. 437,711
Int. Cl.[4] C07C *17/10*
U.S. Cl. 570—253 6 Claims

1. A process for making 1,1,2-trichloroethane from 1,1-dichloroethane which comprises (1) mixing vapors of 1,1-dichloroethane with chlorine (2) reacting by passing said mixture over a Y-type molecular sieve (3) separating 1,1,2-trichloroethane from unreacted 1,1-dichloroethane and (4) recycling said 1,1-dichloroethane to the reaction.

4,605,802
PRODUCTION OF 1,1,1,3-TETRACHLOROPROPANE

Gary W. Astrologes, Hackensack, N.J., assignor to Halocarbon Products Corp., Hackensack, N.J.

Filed Apr. 1, 1982, Ser. No. 364,175
Int. Cl.[4] C07C *17/28*
U.S. Cl. 570—257 12 Claims

1. A process comprising reacting carbon tetrachloride with ethylene in the presence of a catalyst comprising a phosphite ester and powdered iron thereby to produce 1,1,1,3-tetrachloropropane.

4,605,803
ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,194, Apr. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 555,118, Nov. 25, 1983, Pat. No. 4,550,092, which is a division of Ser. No. 317,037, Nov. 21, 1981, Pat. No. 4,435,516. This application Oct. 15, 1985, Ser. No. 787,183
Int. Cl.[4] C07C *1/20, 1/253*
U.S. Cl. 585—408 16 Claims

1. A process for conducting acid-catalyzed conversion of feedstock comprising alcohol, compound containing a carbonyl group, ether or mixtures thereof to product comprising hydrocarbons which comprises contacting said feedstock at conditions sufficient to convert said feedstock to said product hydrocarbons with a catalyst comprising a zeolite composition prepared by a method comprising treating a crystalline zeolite having an initial silica-to-alumina mole ratio of at least 500 with an ammoniacal solution of an alkali metal aluminate for a period of time ranging from about 20 minutes to about 30 days at a temperature of from about 20° C. to about 50° C. and at a pH of at least 10.

4,605,804
ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 713,213, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 631,688, Jul. 16, 1984, Pat. No. 4,524,140, which is a continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Oct. 15, 1985, Ser. No. 787,573
Int. Cl.[4] C07C *1/20, 1/253*
U.S. Cl. 585—408 18 Claims

1. A process for converting feedstock comprising organic compounds selected from the group consisting of alcohol, compound containing a carbonyl group, ether and mixtures thereof to conversion product comprising hydrocarbon compounds which comprises contacting said feedstock at conditions sufficient to convert said feedstick to said product hydrocarbons, with a catalyst composition prepared by a method for substituting aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises hydrothermally treating said zeolite in the presence of a compound of said aluminum or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

4,605,805
ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 713,213, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 631,688, Jul. 16, 1984, Pat. No. 4,524,140, which is a continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Oct. 15, 1985, Ser. No. 787,576
Int. Cl.[4] C07C *2/00*
U.S. Cl. 585—415 21 Claims

1. A process for converting feedstock comprising C_2^+ olefins, C_2–C_7 paraffins or a mixture thereof to conversion product comprising C_5^+ hydrocarbon compounds which comprises contacting said feedstock at conditions sufficient to convert said feedstock to said C_5^+ product hydrocarbons with a catalyst composition prepared by a method for substituting

aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises hydrothermally treating said zeolite in the presence of a compound of said aluminum or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

4,605,806

PROTON-CATALYZED REACTIONS CATALYZED BY HYDROGEN ION-EXCHANGED LAYERED CLAYS

James A. Ballantine, West Cross, Wales; Reginald Gregory, Camberley, England; John H. Purnell, Bishopston, Wales; John M. Thomas, Cambridge, and David J. Westlake, Woking, both of England, assignors to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 417,873, Sep. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 218,552, Dec. 22, 1980, abandoned. This application Feb. 1, 1985, Ser. No. 697,510

Claims priority, application United Kingdom, Dec. 22, 1979, 7944315; May 17, 1980, 8016384; Jul. 5, 1980, 8022102; Jul. 5, 1980, 8022101; Aug. 9, 1980, 8026028

Int. Cl.[4] C07C *2/68*

U.S. Cl. 585—467 11 Claims

1. A process for the production of an alkyl aromatic compound by reacting at elevated temperature an aromatic hydrocarbon with an alkylating agent selected from olefins and C_2 or higher alcohols in the presence of a hydrogen ion-exchanged layered clay catalyst.

4,605,807

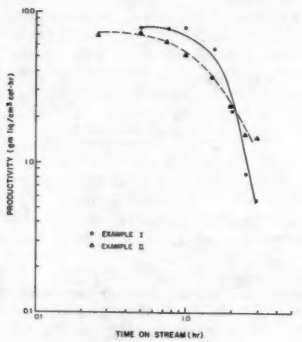
PROCESS FOR CATALYTIC CONVERSION OF ETHYLENE TO HIGHER HYDROCARBONS

Harry Mazurek, Bala Cynwyd, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 605,014, Apr. 27, 1984, abandoned. This application May 6, 1985, Ser. No. 730,886

Int. Cl.[4] C07C *2/02*

U.S. Cl. 585—517 19 Claims



1. A process for converting ethylene to normally liquid hydrocarbons which comprises contacting a gas comprising ethylene with a siliceous crystalline molecular sieve under high severity conditions including elevated temperatures and short olefin contact times, said conditions being selected such that the liquids productivity of the catalyst is greater than about 50% of the theoretical maximum.

4,605,808

CATIONIC POLYMERIZATION OF 1-OLEFINS

John N. R. Samson, Stirling, Scotland, assignor to BP Chemicals Limited, London, England

Filed Oct. 30, 1984, Ser. No. 666,567

Claims priority, application United Kingdom, Nov. 1, 1983, 8329082

Int. Cl.[4] C07C *3/18*

U.S. Cl. 585—525 15 Claims

1. A liquid phase process for the cationic polymerisation of a feedstock comprising 1-olefins in the presence of boron trifluoride as catalyst at a temperature between −100° and +50° C. characterised in that the catalyst is a preformed complex of boron trifluoride and an alcohol and the contact time of the polymerisation reaction is at least 8 minutes such that at least 70% of the unsaturated linkages in the polymer product are in the terminal position.

4,605,809

ALUMINOSILICATES AND SILICA GELS HAVING A LOW CONTENT OF TRANSITION ELEMENTS, A PROCESS FOR THEIR USE IN THE CONVERSION OF METHANOL TO OLEFINS

Heinz Litterer, Wiesbaden; Friedrich Wunder, Flörsheim am Main; Ernst I. Leupold, Neu-Anspach, and Herbert Baltes, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 410,910, Aug. 24, 1982, abandoned. This application Oct. 27, 1983, Ser. No. 545,957

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133747

Int. Cl.[4] C07C *1/24*

U.S. Cl. 585—640 6 Claims

1. A method for preparing a C_2–C_4 olefin from methanol which comprises contacting methanol, with an aluminosilicate or silica gel which contains a transition element, said aluminosilicate or silica gel having been prepared by treating said aluminosilicate or silica gel with a solution of a complexing agent at a temperature of 70° to 150° C. to wherein the content of the transition element is reduced in an amount of from at least 1.8 percent by weight to 0.5 percent by weight or less whereby the selectivity of the C_2–C_4 olefin is improved.

4,605,810

ALLENE OR ALKYNE TREATMENT OF OLEFIN CONVERSION CATALYSTS

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 9, 1985, Ser. No. 764,046

Int. Cl.[4] C07C *6/00*

U.S. Cl. 585—646 11 Claims

1. In a disproportionation process which comprises contacting at least one olefin from the group consisting of:

acyclic mono- and polyenes having at least 3 up to 10 carbon atoms per molecule, and cycloalkyl and aryl derivatives thereof;

cyclic mono- and polyenes having at least 4 up to 10 carbon atoms per molecule, and alkyl and aryl derivatives thereof;

mixtures of two or more of the above olefins; and

mixtures of ethylene with one or more of the above olefins capable of undergoing disproportionation with a tungsten oxide on silica disproportionation catalyst system under disproportionation conditions, the improvement comprising contacting said catalyst with an activating amount of at least one alkyne conforming to the formula:

$$R—C{\equiv}C—R$$

wherein each R is independently H or a C_1–C_6 carbon radical per mole of tungsten oxide.

4,605,811

PROCESS FOR RESTORING OR MAINTAINING THE ACTIVITY OF HETEROGENEOUS CATALYSTS FOR REACTIONS AT NORMAL AND LOW PRESSURES

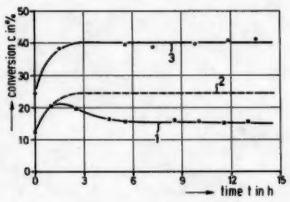
Helmut Tiltscher; Helmut Wolf; Joachim Schelchshorn, and Kurt Dialer, all of Hoechst Aktiengesellschaft, D-6230 Frankfurt/Main 80, Fed. Rep. of Germany

Continuation of Ser. No. 268,387, May 29, 1981, abandoned. This application May 6, 1985, Ser. No. 731,348

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020698

Int. Cl.[4] C07C *5/23, 5/25, 2/68;* B01J *21/20*

U.S. Cl. 585—670 4 Claims



1. A process for reactivating or maintaining the activity of an oxide contact catalyst useful for catalytic isomerization of hexene by shifting of a double bond at atmospheric or low pressure wherein the oxide contact catalyst tends to decrease in activity by deposition, physisorption or chemisorption of organic or inorganic deactivating substances present at the start of said catalytic isomerization or formed during said isomerization, which comprises conducting said catalytic isomerization at an operating pressure above the critical pressure and a temperature of at least equal to the critical temperature of the fluid hexene reactant for a period of time at least sufficient to remove any deactivating substances on said catalyst and to avoid formation, deposition, physisorption or chemisorption thereof on said catalyst.

3. The process of claim 1 wherein the effective critical pressure and temperature of said reactants is lowered by addition of an effective amount of a compatible reaction auxiliary inert to said catalytic reaction.

4. The process of claim 1 wherein said catalyst is η-Al_2O_3 and said hexene is 1-hexene.

4,605,812

PROCESS FOR REMOVAL OF ARSENIC FROM GASES

G. P. Nowack, and M. M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 5, 1984, Ser. No. 617,430

Int. Cl.[4] C07C *7/148;* C10G *29/04*

U.S. Cl. 585—845 21 Claims

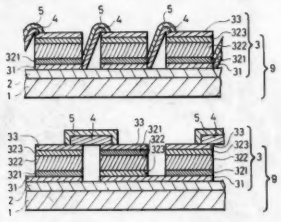
1. A process for removing arsine impurities from a gaseous stream or, alternatively, a liquid stream by contacting said stream with a sorbent consisting essentially of a material selected from the group consisting of (A) copper (II) chromite and (B) copper (II) chromite promoted by at least one alkaline earth metal oxide.

4,605,813

AMORPHOUS SILICON SOLAR BATTERY

Yukihisa Takeuchi, Chita; Masaaki Mori, Bisai; Kenji Maekawa, Kariya, and Toshiaki Nishizawa, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 533,813, Sep. 19, 1983, abandoned. This application Jul. 11, 1985, Ser. No. 754,201
Claims priority, application Japan, Sep. 29, 1982, 57-170770
Int. Cl.[4] H01L *27/14, 31/06*
U.S. Cl. 136—244 8 Claims



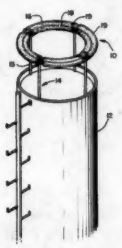
1. A flexible amorphous silicon solar battery for attaching to a curved body portion comprising:
- a metal foil as the substrate thereof;
- an insulating layer which is amorphous silicon nitride containing hydrogen formed on said metal foil integrally by plasma chemical vapor deposition, the thickness of which is 0.05–0.2 μm; and
- at least one amorphous silicon photoelectric conversion portion formed on said insulating layer.

4,605,814

LIGHTNING DETERRENT

Vernon A. Gillem, 9777 86th Ave. N., Seminole, Fla. 33543

Continuation-in-part of Ser. No. 436,042, Oct. 22, 1982, abandoned. This application Oct. 22, 1984, Ser. No. 663,415
Int. Cl.[4] H02G *13/00*
U.S. Cl. 174—2 10 Claims



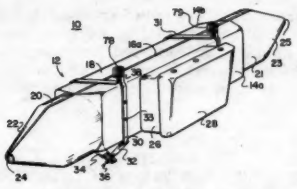
1. A lightning deterrent for protecting a tall structure such as a tansmission tower comprising:
- an electrically conductive core formed in an annular configuration and having a length at least sufficient to contain the vertical plane or planes which contain the vertical sides of the structure to be protected at its highest point;
- a multiplicity of electrically conductive wires, each joined substantially at its midpoint to said core, said wires being disposed along the length of said core in a substantially uniform density per inch of length in a number sufficient to form a brush-like structure wherein the free ends of substantially all of said wires are out of contact with adjacent wires and the density thereof does not exceed about 250 wires per inch; and
- means for mounting said core on a structure to be protected above the highest point thereof.

4,605,815

FIXED COUNT TERMINAL

Ronald L. Wilson, 8970 Par Dr., Douglasville, Ga. 30134

Filed Aug. 3, 1984, Ser. No. 637,599
Int. Cl.[4] H02G *15/113, 7/08*
U.S. Cl. 174—41 11 Claims



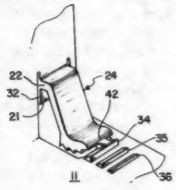
1. A fixed count terminal for a multiconductor cable, comprising:
- an elongate terminal shell having longitudinal cable ports and being formed of two half-shells having substantially identical interior conformations, each half-shell having transverse symmetry and truncated tapered ends;
- a terminal block affixed to the outside of said shell;
- a block compartment enclosing said terminal block and having fixed count entry ports; and
- an articulated binding extending transversely around said shell, the articulated segments of said binding being affixed to said half-shells, respectively.

4,605,816

MOLDED OUTLET BOX WITH INTEGRAL CABLE CLAMP

Robert W. Jorgensen, Niles, Mich., and Thomas E. Lewis, South Bend, Ind., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Feb. 19, 1985, Ser. No. 703,041
Int. Cl.[4] H02G *3/08*
U.S. Cl. 174—65 R 5 Claims



1. A molded, thermoplastic outlet box comprising
- a back wall and at least one side wall intersecting to form a box having a front opening;
- means at a corner formed by the intersection of said back wall and said at least one side wall defining a generally L-shaped opening extending away from said corner into both of said side and back walls to receive a cable;
- a flexible and resilient clamp arm unitarily formed on an inner surface of one of said side and back walls, said clamp arm having
  - a root portion extending inwardly from a location on said one of said walls spaced from the distal edge of said one of said walls at said opening,
  - an arm portion extending across said opening toward the other of said walls, and
  - a toothed portion at the end of said arm portion,
  - said clamp arm being swingable between a first position in which the distal end of said toothed portion is adjacent the distal edge of said other of said walls and a second

position in which said toothed portion is spaced inwardly from said other of said walls;

means defining first and second generally parallel slots in said one wall extending away from said opening on opposite sides of and beyond said location of said root portion on said one wall; and

means on said other of said walls forming an abutment adjacent the distal edge thereof for engaging said toothed portion of said clamp arm and preventing movement thereof away from said first position until said clamp arm is flexed by an inward force exceeding a predetermined level.

4,605,817

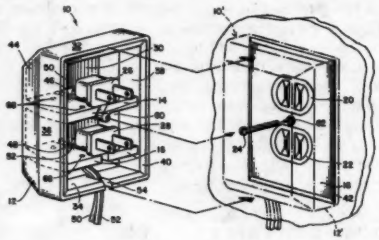
SAFETY COVER FOR ELECTRICAL OUTLETS

Carlos A. Lopez, P.O. Box 391071, Mountain View, Calif. 94039

Filed Apr. 25, 1984, Ser. No. 603,673

Int. Cl.[4] H02G *3/18*

U.S. Cl. 174—67 **18 Claims**



1. A safety cover for an electrical outlet assembly having a cover plate and a separated pair of sockets extending through said cover plate, said safety cover comprising:

an enclosure provided with an opening adapted to fit over said cover plate;

first brace means located within said enclosure, said first brace means being provided with a first elongated slot extending from said opening of said enclosure towards the interior of said enclosure; and

second brace means separated from said first brace means, said second brace means being provided with a second elongated slot extending from said opening of said enclosure towards the interior of said enclosure.

4,605,818

FLAME-RESISTANT PLENUM CABLE AND METHODS OF MAKING

Candido J. Arroyo, Lilburn; Nicholas J. Cogelia, Duluth, and Palmer D. Thomas, Tucker, all of Ga., assignors to AT&T Technologies, Inc., Berkeley Heights and AT&T- Bell Laboratories, Murray Hill, both of, N.J.

Filed Jun. 29, 1984, Ser. No. 626,085

Int. Cl.[4] H01B *7/02, 7/22*

U.S. Cl. 174—107 **17 Claims**

1. A relatively low pair count cable which resists flame spread and smoke evolution, said cable comprising:

a core which includes at least one conductor enclosed in a plastic coating; and

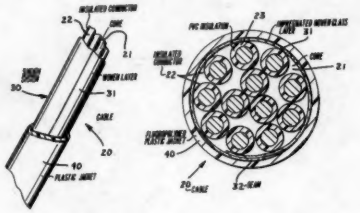
a sheath system which encloses said core and which has a relatively low thermal conductivity, said sheath system being effective to delay thermal decomposition of the conductor coating when the cable is subjected to a relatively high temperature and including;

a relatively thin layer of a woven material which encloses said core and which has a longitudinal overlapped seam, said layer of woven material being impregnated with the degree of impregnation being a function of the number of conductors in the core and having an air permeability in the range of about 0 to 35 cfm which is sufficiently low to minimize gaseous flow through said layer and to delay heat transfer to the core for a predetermined time; and

an extruded jacket of a fluoropolymer plastic material which encloses said layer of woven material.

14. A method of making a fire retardant plenum cable, said method comprising the steps of:

advancing a core comprising at least one conductor which is enclosed in a coating comprising a polyvinyl chloride composition along a path of travel;



wrapping a relatively thin strip of woven glass material which is impregnated with a plastic material and which has a relatively low air permeability that falls in the range of about 0–35 cfm, and a relatively low thermal conductivity about said core without duly compressing said core to form a longitudinal overlapped seam; and

extruding a layer of a fluoropolymer plastic material about the strip of woven glass material to form a jacket.

4,605,819

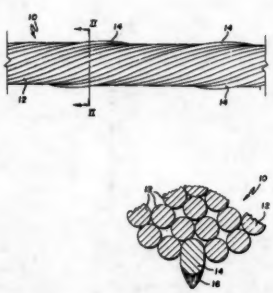
CONDUCTOR FOR HIGH VOLTAGE ELECTRICITY

Frank W. Warburton, 2 Warburton La., Westboro, Mass. 01581

Filed Oct. 1, 1984, Ser. No. 656,491

Int. Cl.[4] H01B *5/08*

U.S. Cl. 174—127 **3 Claims**



1. Conductor for high voltage electricity comprising:

(a) a plurality of circular conductor wires which are wound helically to form a gernerally circular cable, said cable including an outermost annular layer, and

(b) a protrusion wire which forms part of said outermost annular layer and which extends helically along said cable with the wires of said outermost layer, a portion of, said protrusion wire protruding outwardly beyond the outer periphery of said cable, said protrusion wire being elongated in cross-section and having a major dimension which extends along a radial line which extends from the center of said cable and a minor dimension which is substantially equal to the diameter of said conductor wires, the dimension of said protrusion wire in a direction which

is normal to said radial line being no greater that said minor dimension at any point along said radial line.

3. Conductor for high voltage electricity comprising:

(a) a plurality of circular conductor wires which are wound helically to form a generally circular cable, said cable including an outermost annular layer, and

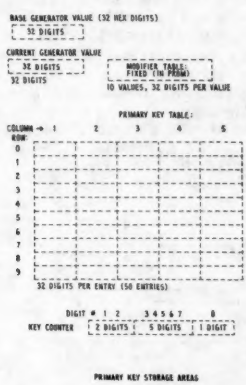
(b) a protrusion strand which forms part of said outermost annular layer and which extends helically along said cable, said protrusion strand protruding outwardly beyond the outer periphery of said cable, said protrusion strand being made entirely of a material having a low dielectric constant and high electrical resistance.

4,605,820

KEY MANAGEMENT SYSTEM FOR ON-LINE COMMUNICATION

Carl M. Campbell, Jr., Newtown Square, Pa., assignor to VISA U.S.A. Inc., San Mateo, Calif.

Filed Nov. 10, 1983, Ser. No. 550,885
Int. Cl.[4] H04L *9/00*
U.S. Cl. 178—22.09 **13 Claims**



1. A transaction terminal having a cryptographic key generator suitable for on-line encrypted communication between the terminal and a central host comprising:

means for encrypting data;

means for receiving and storing a base generator value;

storage means containing a plurality of modifier values;

means for generating a matrix table of encryption keys wherein the keys in a first column in the matrix table are generated by encrypting said modifier values using the base generator value as the encrypting key and wherein the keys of the second and each successive column in the table are generated by encrypting the modifier values with the first unused key in the previous column, and wherein any key that is used to generate a column of keys is immediately erased; and

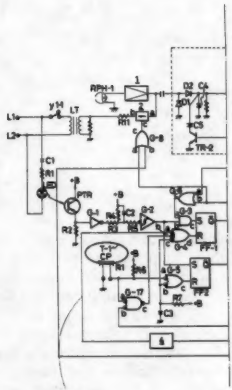
counter means, having at least as many digits as columns in said matrix, with the location of the digits in the counter means corresponding to a particular column in the matrix and with the value of each digit corresponding to a particular row in the matrix, whereby transmission of the value in the counter means to the host during a transaction will enable the host to determine the key used to encrypt the communication.

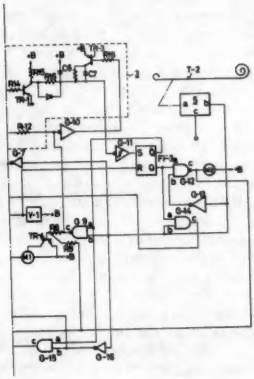
4,605,821

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,493
Claims priority, application Japan, Oct. 29, 1982, 57-190300
Int. Cl.[4] H04M *1/64*
U.S. Cl. 179—6.13 **9 Claims**





6. An automatic telephone answering apparatus, comprising means for detecting a condition of an incoming message tape, means for selectively transmitting only one of a first message or a second message from an outgoing message tape in response to an incoming call in response to said detecting means according to whether the incoming message tape is in a condition to record an incoming message, and means for detecting the start of the first message and/or the end of the second message for advancing the outgoing message tape through the non-transmitted second or first message respectively and stopping the outgoing message tape at the start of the first message and/or the end of the second message.

4,605,822
ACTIVE EQUALIZATION CIRCUIT

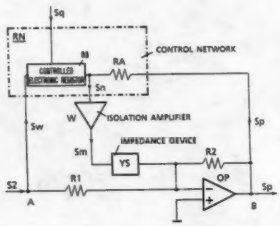
Johann Amstutz, Döttingen, and Bruno Wenger, Au, both of Switzerland, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,088

Claims priority, application Switzerland, Sep. 30, 1983, 5325/83

Int. Cl.[4] H04B *3/08*

U.S. Cl. 179—16 AA **5 Claims**



1. An active equalizer circuit with an equalization structure containing an addition amplifier inserted between an input terminal and an output terminal of the equalization structure as well as an impedance device inserted between an input of the addition amplifier and an output of an isolation amplifier whose input is connected both to the output terminal and the input terminal of the equalization structure, respectively, via attenuation means characterized in that the attenuator means comprises a resistor (RA or RB') of a fixed resistance and a controlled electronic resistor (RB or RA') of variable resistance, a controlling input of the controlled electronic resistor forming a controlling input of the active equalizer circuit; that the controlled electronic resistor contains first and second operational amplifiers (VA; VB) each driving a respective controlled current source (QA; QB), an output of one of the current sources (QA) being connected to the input of the isolation amplifier (W) and an output of the other current source (QB) being connected to either the input or output terminal of the equalization structure; and that this controlled electronic resistor contains a resistor (R4) inserted between two respective signal inverting inputs of the two operational amplifier (VA or VB), a non-inverting input of the first operational amplifier (VA) being connected to the inverting input of the second operational amplifier and, via a second resistor (R5), to the output of the one current source (QB) driven by the second operational amplifier, while the inverting input of the first operational amplifier (VA) is connected to a non-inverting input of the second operational amplifier (VB) and, via a third resistor (R3), to the output of the other current source (QA) and each one of these current sources (QA, QB), having a control input connected to the control input of the controlled electronic resistor.

4,605,823
PHONE CONFERENCE SYSTEM

Yozo Sudo, Yamato; Hiroyuki Mori, Tama, and Atsuya Murai, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 7, 1983, Ser. No. 549,471

Claims priority, application Japan, Nov. 12, 1982, 57-171933[U]

Int. Cl.[4] H04M *1/60, 3/56*

U.S. Cl. 179—18 BC **5 Claims**

1. A phone conference system having a plurality of microphones and speakers operatively connected to a telephone, comprising:

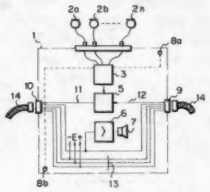
a receiving line operatively connected to the telephone;

an amplifier operatively connected to the receiving line; and

a plurality of units, each unit including:

a speaker operatively connected to the amplifier,

a preamplifier-mixer, operatively connected to the plurality of microphones and having an output, for unifying the outputs of the plurality of microphones, and



a summing amplifier, operatively connected to the preamplifier-mixer in the same unit and the preamplifier-mixer in another unit, for unifying the output of said preamplifier-mixer in the same unit and the output of the preamplifier-mixer in another unit, the plurality of units being connected in cascade to said telephone.

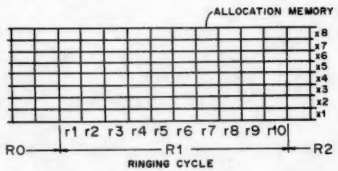
4,605,824
CIRCUIT ARRANGEMENT FOR TELECOMMUNICATION EXCHANGE SYSTEMS, PARTICULARLY TELEPHONE EXCHANGE SYSTEMS WITH SWITCH FACILITIES FOR EMITTING SIGNALS

Josef Birlmeier, Deisenhofen; Klaus Eberlein, Wolfratshausen, and Werner Nagler, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,321

Int. Cl.[4] H04M *3/02*

U.S. Cl. 179—18 HB **8 Claims**



1. In a method for signalling subscribers in a telecommunication exchange system wherein

each subscriber connects via a subscriber line circuit to a central switching network for routing incoming calls to an identified subscriber;

an electrical current call generator as a signalling power source is provided which is connected to each of the subscriber line circuits so as to supply signal current pulses thereto for signalling the respective subscribers;

each subscriber line circuit having a call connector switch which in a first position connects the subscriber through the subscriber line circuit to the switching matrix network and in a second position switches said signal current from the call generator through to the subscriber;

and the signalling to the subscriber comprising a plurality of spaced signalling pulses;

wherein the improvement comprises the steps of:

providing an allocation control having an allocation memory, a writer device connected to the allocation memory, and a read device connected to the allocation memory, the allocation memory comprising a matrix with a plurality of storage positions and having a given number of divisions along a first dimension and a given number of divisions along a second dimension;

providing the matrix first dimension such that it corre-

sponds to a signalling cycle wherein a given subscriber being called receives a signal pulse, each division of the first dimension corresponding to a different phase during the ringing cycle;

providing the second dimension such that its given number of divisions corresponds to a maximum number of subscribers to which a signalling pulse is to be sent during a given phase of the ringing cycle;

after completion of a connection set-up to a given subscriber line circuit of a repsectively dialed subscriber by the switching matrix network, writing an identification of the respective subscriber line circuit with the write device into one of the positions of the allocation memory matrix;

reading the matrix with the read device along the first dimension such that subscriber identifications stored for each ringing phase during a ringing cycle are read out, said read out subscriber identifications being employed to switch the respective call connector switches and thus pass signalling current to the respective subscriber so as to provide the signalling pulse to each of the subscribers identified during the given phase, the call connector switch being disconnected from the current call generator as soon as the next phase is being read, the read device then repeating the reading of the phases for another ringing cycle so as to send another signal pulse to the subscriber; and

when the subscriber answers or when the switching matrix network indicates that the subscriber is no longer being called, the write device cancelling the respective subscriber identification from the matrix memory so that further signalling pulses to the subscriber do not occur.

4,605,825

FUNCTION KEY ASSIGNMENTS IN A KEY TELEPHONE SYSTEM

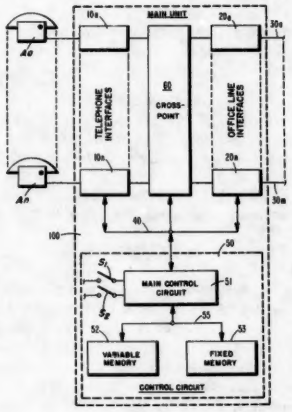
Isaku Komuro; Yoshikazu Sano, and Shinichi Shibata, all of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Mar. 5, 1984, Ser. No. 586,040

Claims priority, application Japan, Mar. 3, 1983, 58-33782

Int. Cl.⁴ H04M *3/32*

U.S. Cl. 179—99 R **7 Claims**



1. Apparatus simultaneously assigning a chosen function to each of a plurality of assignable function keys on a key telephone set, said apparatus comprising:

memory means for storing a plurality of predetermined arrays of function assignments,

data input means coupled to said memory means for selecting the one of the stored arrays having the chosen functions corresponding to said assignable function keys; and

control means coupled to said set and said data input means for assigning the functions of said assignable function keys in accordance with the selected array.

4,605,826

ECHO CANCELER WITH CASCADED FILTER STRUCTURE

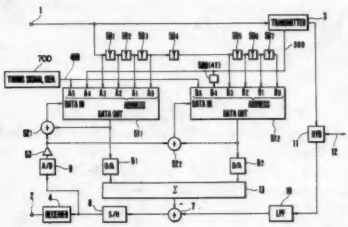
Akira Kanemasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,306

Claims priority, application Japan, Jun. 23, 1982, 57-107821; May 17, 1983, 58-86181

Int. Cl.⁴ H04B *3/20*

U.S. Cl. 179—170.2 **7 Claims**



1. An echo canceler for canceling an echo as a leakage component to a four-wire receiving end in a two-wire/four-wire conversion hybrid circuit when a transmitted signal is sent from a four-wire line to a two-wire line, comprising:

transmitting means for receiving a transmitted binary data sequence having a predetermined interval therebetween, converting the transmitted binary data sequence to a given coded signal including sign designation signals, and producing the given coded signal and sign designation signals at an output;

an adaptive digital filter including a plurality of delay elements for receiving the transmitted binary data sequence, delaying the transmitted binary data sequence by one sampling interval so as to obtain delayed data sequences, and dividing the delayed data sequences into a plurality of groups of signal components, the groups of signal components being produced as address signals, respectively, and

a plurality of memories respectively having memory cells the storage contents of which are read out in response to the address signals from said delay elements and sign designation signals such that a first memory among said plurality of memories directly receives the sign designation signal, and 2nd through Nth (n is 2, 3, 4, . . .) memories among said plurality of memories respectively receive the sign designation signals through delay lines so that the Nth memory receives the sign designation signal delayed by a time interval corresponding to delay time of an (N−1)th delay element among said plurality of delay elements, the number of said memories being equal to that of the plurality of groups of signal components;

a timing signal generator for generating additional address signals to said plurality of memories;

a plurality of D/A converters for converting readout digital signals from said plurality of memories to analog signals, respectively;

an analog adder for adding all the analog signals from said plurality of D/A converters to produce an echo replica;

a hybrid circuit for receiving the coded signal from said transmitting means, and a received signal, including additive noise, from said two-wire line, the coded signal being repreduced as said echo signal;

a low-pass filter for receiving the echo signal, the received signal including the additive noise and for eliminating a high frequency signal component therefrom;

a subtractor for receiving a filtered signal from said low-pass filter and the echo replica from said analog adder and for subtracting the echo replica from the filtered signal so as to produce an error signal;

a sample-and-hold circuit for receiving said error signal and for producing a sampled signal;

an A/D converter for receiving the sampled signal from said sample-and-hold circuit and for producing a digital signal; and

receiving means for receiving and decoding the sampled signal and for sending a decoded signal therefrom,

said adaptive digital filter further including a plurality of 2-input adders, each of which receives a signal from said A/D converter and one of the digital signals read out from said plurality of memories, the number of said 2-input adders being equal to that of said memories, and sum signals from said 2-input adders being stored in said memories, respectively.

4,605,827

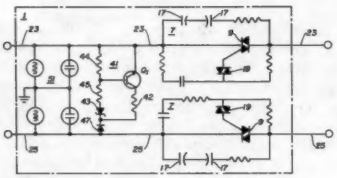
LINE FAULT DISCRIMINATOR

Leo M. Chattler, Moraga, Calif., assignor to DCM Industries, Inc., San Leandro, Calif.

Continuation of Ser. No. 119,487, Feb. 7, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,677

Int. Cl.[4] H04B *3/46*

U.S. Cl. 179—175.3 F **14 Claims**



12. In combination, a transmission line such as for use in a telephone installaion including a telephone on one end thereof, means including an electronic circuit in series in said line in proximity to said telephone and a remote test station including means controllable, via the transmission line, by an operator for determining the existence of a fault with respect to said electronic circuit without interfering with telephone communications over said transmission line, whereby, faults may be tested concurrently with normal telephone use.

4,605,828

MEMBRANE KEYBOARD SWITCH MOUNTING

Dominic A. Gostomski, Jr., Versailles, and Jerry G. Price, Paris, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1984, Ser. No. 614,614

Int. Cl.[4] H01H *13/70*

U.S. Cl. 200—5 A **13 Claims**

1. A keyboard comprising

a matrix multilayer switch comprising:

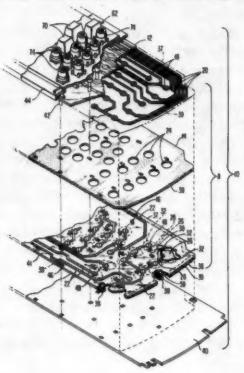
a first flexible sheet with a first and second surface with electrical circuit paths and plural switch contacts deposited on said first surface thereof;

a second flexible sheet with electrical circuit paths and plural switch contacts deposited on a first surface thereof;

a spacer sheet with at least an aperture formed therein, positioned between said first and second flexible sheets and with said aperture aligned with portions of said electrical circuits on each of said sheets to form a passage through which said circuit on said second flexible sheet may contact said circuit on said first flexible sheet and with said first surfaces in face-to-face relation with faces of said spacer,

at least a zone of adhesive interposed between said spacer and each of said flexible sheets to form a multilayer structure with each of said spacer and sheets restricted from movement with respect to each other in the plane of said spacer sheet; and

a rigid support plate and adhesive engaging a first surface thereof, said multilayer switch adhesively attached to said rigid support plate, said adhesive engaging said rigid support plate comprising at least a spot of adhesive



localized at and positioned between said support plate and said multilayer switch and adjacent said each of said switch contacts and engaging said second surface of said first flexible sheet, thereby stabilizing said electrical circuit path on said first flexible sheet, the substantial portion of the remainder of said second surface remaining without adhesive, and

an actuator means aligned with and operable manually to actuate said multilayer switch, comprising a keybutton and a switch engaging member operable upon displacement of said keybutton to deflect switch contacts on said second sheet into contact with said switch contacts on said first sheet.

4,605,829

MEASURING THE LOAD ON LIFTING EQUIPMENT

Karl Zacharias, Schwerte, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesselschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,448

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323662

Int. Cl.[4] H01H *3/02*

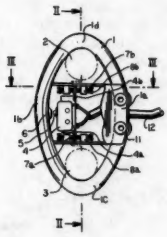
U.S. Cl. 200—52 R **16 Claims**

1. A device measuring a load as it is effective on a lifting facility by virtue of the suspended load comprising:

a measuring device constructed as an oval closed ring chain link element with near rectangular cross-sections and being interposed in a load transmission path between said lifting facility and said suspended load to act along a long dimension of the chain link element having two curved long sides, said long sides being interconnected transversely by plate means, being secured to one of said long sides while permitting relative movement relative to the respective other long side, said long sides tend to straighten under tension load on the chain link element; and

a deformation sensing device including at least one switch

mounted on said plate means to thereby being interposed between said long sides and being actuated by the other



one of the long sides when said long sides approach each other under load.

4,605,830

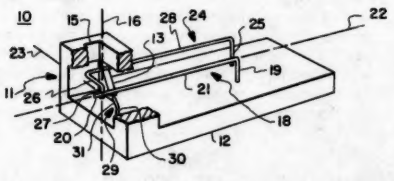
CAMMED WIRE SNAP SWITCH

Bruce E. Reid, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1984, Ser. No. 681,177

Int. Cl.[4] H01H *5/04, 13/38*

U.S. Cl. 200—73 **21 Claims**



1. A snap acting mechanism comprising:

a plunger adapted for reciprocal movement between released and depressed positions, said plunger having intersecting end and side surfaces which define a plane transverse to the side surface and containing at least a portion of the end surface;

a first resilient element having a fixed end, and having a free end biased to a position proximate the end surface of said plunger; and

deflection means for deflecting the free end of said first resilient element across the end surface of said plunger toward the side surface thereof as said plunger is depressed, whereby when the free end of said first resilient element passes the intersection of the end and side surfaces its springs along the side surface away from the end surface, said deflection means including a stationary ramp surface extending traversely to the direction of movement of said plunger and passing through the plane defined by the end and side surfaces of said plunger at a location which moves toward the intersection of the end and side surfaces as said plunger is depressed.

4,605,831

SWITCH FOR PROTECTING A FREON COMPRESSOR

Ronald R. Mitchell, 248 Azalea Cir., Vinton, Va. 24179

Filed May 28, 1985, Ser. No. 737,862

Int. Cl.[4] H01H *35/40*

U.S. Cl. 200—83 R **5 Claims**

1. A device for sensing pressure and temperature within the crankcase of a refrigerant compressor and stopping the operation of the compressor when the sensed values of pressure and temperature suggest the possible existence of liquid refrigerant within said crankcase, said device comprising:

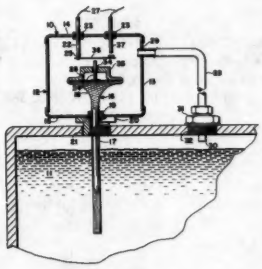
(a) a pressure-retaining chamber having a rigid wall structure,

(b) a sealed vessel containing liquid refrigerant, said vessel having

(1) an elongated portion which extends through the wall of said chamber and is configured to be positioned within said crankcase, and

(2) a head portion positioned within said chamber,

(c) pressure-displaceable means which seals the head portion of said sealed vessel,



(d) electrical contact means disposed within said chamber in operative association with said pressure-displaceable means and communicating through said chamber wall to joinder with electrical conductors, said contact means acting to make and break an electrical circuit which controls the operation of the compressor,

(e) a pressure equalizing conduit having a proximal extremity which communicates with the interior of said chamber, and a distal extremity configured to communicate with the interior of said crankcase, and

(f) means associated with the elongated portion of said sealed vessel for enabling said portion to penetrate said crankcase while preventing leakage of the contents of said crankcase.

4,605,832

DIFFERENTIAL BELLOWS PRESSURE SWITCH

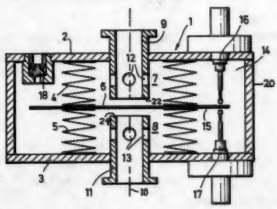
Gerd Koopmann, Rosrath, Fed. Rep. of Germany, assignor to Leybold Heraeus GmbH, Fed. Rep. of Germany

Filed Jun. 4, 1984, Ser. No. 617,003

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 8332797[U]

Int. Cl.[4] H01H *35/32*

U.S. Cl. 200—83 D **8 Claims**



1. Differential pressure switch containing switch means and a housing having two faces opposite each other, comprising:

(a) two approximately coaxial bellows arranged in the housing, with each bellows having one of its sides securely fastened to a face of the housing;

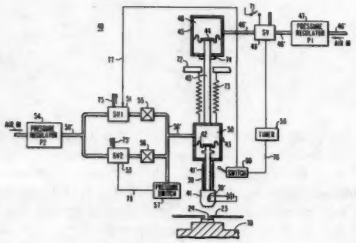
(b) a dividing sheet arranged between the bellows such that two separated work chambers are formed, each work chamber being defined by one face of the housing, by a bellows and by the dividing sheet, the dividing sheet having a section projecting sideways beyond the bellows for switch control of said switch means, wherein the two work chambers are each equipped, in the area of its housing face, with a fitting for connection to a receiver chamber containing a working fluid, with the fittings being arranged on both sides of the dividing sheet to prevent a strain of the bellows, and projecting so far into the work chambers that the fittings concurrently form support elements for the dividing sheet.

4,605,833

LEAD BONDING OF INTEGRATED CIRCUIT CHIPS

Frank A. Lindberg, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 15, 1984, Ser. No. 589,912
Int. Cl.[4] B23K *31/00*
U.S. Cl. 219—56.22 **6 Claims**



1. A method of gang bonding metallic leads to metallic pads of an integrated circuit chip to minimize chip fracture, comprising the steps of

placing the leads and pads in bonding position beneath a thermode, said thermode being at a selected temperature above the actual bonding temperature of the metallic leads and pads, and said leads and pads being substantially at ambient temperature,

placing the thermode in physical contact with the leads,

increasing at a first selected rate the contact force of the thermode to a selected maximum force less than that required to effect the bond, said first rate being selected as a function of the temperature response of the chip to the thermode to raise the temperature of the leads and pads to a selected fraction of the bonding temperature,

increasing at a second selected rate that is substantially greater than the first selected rate the contact force of the thermode to a maximum pressure sufficient to effect the bond, and

withdrawing the thermode out of physical contact with the bonded leads and pads after a predetermined length of time sufficient to effect the bond.

4,605,834

PRECISION TW ELECTROEROSION WITH STAGGERING MULTIPLE V-NOTCHED GUIDES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Japan

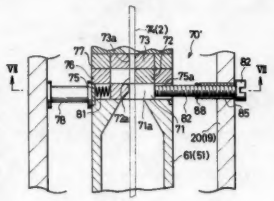
Filed Jan. 25, 1985, Ser. No. 694,811
Claims priority, application Japan, Nov. 8, 1983, 58-210374; Dec. 3, 1983, 58-228850; Jan. 26, 1984, 59-13162
Int. Cl.[4] B23H *7/10*
U.S. Cl. 219—69 W **2 Claims**

1. An apparatus for electroerosively cutting an electrically conductive workpiece with a continuous electrode wire, comprising:

means for axially transporting the electrode wire through the workpiece while defining a cutting zone therewith flushed with a cutting liquid medium;

a pair of wire guide means disposed at opposite sides of the workpiece for providing a straight-line path for the traveling wire therebetween;

power supply means for electrically energizing said cutting zone to erosively remove material from the workpiece; and



cutting feed means for relatively displacing the workpiece and the traveling electrode wire transversely along a programmed cutting path to advance the erosive material removal in the workpiece, wherein at least one of said wire guide means comprises:

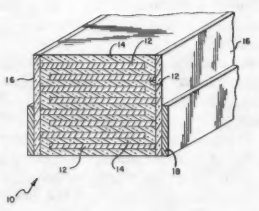
a plurality of planar notched members arranged in the direction of travel of the electrode wire and having respective wire-receptive notches, the notched members being staggered to form a composite opening of said notches such that an imaginary cylinder which can be inscribed therein has a diameter substantially equal to a nominal diameter of the electrode wire.

4,605,835

FORMING TERMINATIONS OF MLC CAPACITORS

Robert J. Deffeyes, Arlington, Tex., assignor to Graham Magnetics Incorporated, North Richland Hills, Tex.

Filed May 21, 1984, Ser. No. 612,728
Int. Cl.[4] B23K *1/19, 26/00*
U.S. Cl. 219—85 BM **8 Claims**



1. A process for attaching a plurality of silver-based body electrodes of a multi-layer-ceramic capacitor blank to a conductive terminating material said process comprising the steps of

(a) placing a predetermined amount of fusible terminating material along exposed edges of said body electrodes,

(b) using a high-intensity radiation heat source to heat said terminating material to its fusing temperature, thereby adhering said terminating material to said exposed edges of said body electrodes, and

(c) terminating said heating so that said terminating material cools before said silver-based body electrodes can be heated to a temperature whereat any substantial quantity

of silver may diffuse out from said body electrode into said terminating material.

4,605,836

PROCESS FOR ACHIEVING PROPER WELD QUALITY IN COURSE OF THE WELDING OPERATION, MARKING THE FAULTS ON THE WORKPIECES AND CERTIFYING THE QUALITY

Ferenc Rétfalvi; László Lukács, both of Budapest; László Molnár, Dunaujváros; György Dózsa, Dunaujváros, and Ádám Szappanos, Dunaujváros, all of Hungary, assignors to Kohaszati Gyarepito Vallalat, Budapest, Hungary

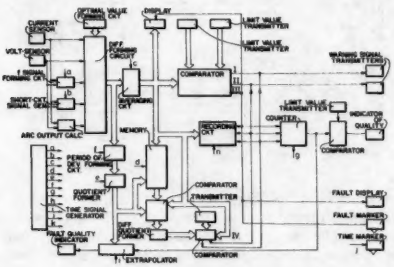
PCT No. PCT/HU84/00007, § 371 Date Sep. 21, 1984, § 102(e) Date Sep. 21, 1984, PCT Pub. No. WO84/02866, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 26, 1984, Ser. No. 662,417

Claims priority, application Hungary, Jan. 26, 1983, 243/83

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—130.01 **6 Claims**



1. Process for maintaining weld quality during welding operation, comprising the marking of the fault spots on the workpiece and certifying of quality, in course of which momentary values of arc current and arc voltage characterizing manual or mechanized welding process are continuously measured and from the values thus obtained relative short-circuit time of the arc, drop frequency and arc power outputs are continuously calculated, said measured momentary values of arc current and arc voltage and said calculated values of relative short-circuit time of the arc, drop frequency and arc power outputs are compared with empirically determined optimal values, thus defining absolute values and signals representing the directions of deviations, duration of deviations, said directions and duration of deviations being related to a predetermined span of time averages of absolute values and, defining signals representing the directions of deviations, forming a quotient of the duration of deviations and of pre-determined durations; said averages of absolute values and said quotients of the duration of deviations and of predetermined durations are recorded and simultaneously averages of the absolute values are compared with a first and second limit value and at a magnitude between the first and second limit value, a warning signal is given for the welder, and at a magnitude exceeding the second limit value a further signal is given and simultaneously a fault spot is marked on the workpiece until said exceeding magnitude is reduced below the second limit value.

4,605,837

ELECTRIC AIR PREHEATER FOR AN INTERNAL COMBUSTION ENGINE

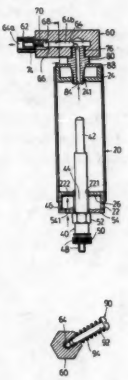
Lih-Ji Chen, No. 34, I-Hsin Third Street, Tai-Pin Hsiang, Taichung, Taiwan

Filed Aug. 6, 1984, Ser. No. 637,903

Int. Cl.[4] H05B *3/00*; F02M *31/12*; F24H *3/00*

U.S. Cl. 219—206 **7 Claims**

1. A preheater adapted to be connected to an internal combustion engine comprising a hollow cylinder, a cover element at each end of the hollow cylinder, said hollow cylinder and cover elements collectively defining an elongate closed heating chamber, an elongate electric heating element in the form of a cylindrical rod supported by the cover element at one end of the hollow cylinder in coaxial relation with the longitudinal axis of the hollow cylinder such as to define with the wall of said cylinder an annular space surrounding the heating element, said cover element at said one end containing an opening defining an air inlet passage into said annular space within said heating chamber, a valve body defining a flow passage closed at one end and open at the other, a coupling element connecting the valve body to the cover element at the other end of the hollow cylinder and embodying a flow passage in communication at one end with the annular space within said heating chamber and at the other end with the flow passage in the valve body intermediate the ends of the valve body flow passage and a spring-biased check valve element located in the flow passage in the valve body adjacent the open end, said spring-biased valve element being biased in a direction to permit flow from the heating chamber through the flow passage in the valve body in the direction of the open end and to prevent flow in a direction from the open end toward the closed end.



4,605,838

ELECTRIC VAPOR BOILER

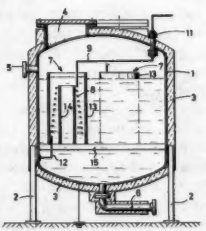
Georges J. Daney, Sceaux, France, assignor to Service National Electricite de France, France

Filed Nov. 28, 1984, Ser. No. 675,945

Claims priority, application France, Nov. 29, 1983, 83 19025

Int. Cl.[4] H05B *3/82*; F22B *1/28*; F24H *1/22*

U.S. Cl. 219—319 **14 Claims**



1. An electric vapor boiler comprising a closed vessel con-

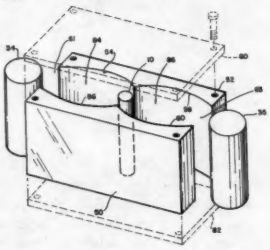
taining a liquid to be vaporized, a vapor outlet conduit connected to said vessel for discharge vapors therefrom, a supply conduit connected to said vessel for supplying liquid thereto, a plurality of multi-phase electric supply terminals connected through through said vessel, electric resistance heating means for vaporizing liquid in said vessel and having a plurality of bare wires each connected to one of said supply terminals and each immersed in the liquid, a plurality of outer insulating screens disposed in said vessel with each screen disposed around one of said bare wires, each bare wire having a plurality of parallel spires spaced vertically in said vessel and offset symmetrically with respect to each other on each side of a generatrix of an oblique surface extending obliquely to a vertical direction in said vessel, and mounting means connected to said bare wires for mounting said bare wires in said vessel so as to vibrate in said outer screens.

4,605,839

DUAL PARISON HEATING REFLECTOR AND METHOD

David E. Rasmussen, Thornton, and Bruce A. Moen, Golden, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Dec. 21, 1984, Ser. No. 684,669
Int. Cl.[4] H05B *3/40*
U.S. Cl. 219—349 **8 Claims**



1. A device for heating a plurality of radiant absorbers comprising:

a source of radiant energy for heating said radiant absorbers with direct radiation which impinges directly upon said radiant absorbers and indirect radiation which does not impinge directly upon said radiant absorbers;

reflector means for reflecting said indirect radiation a single time to impinge upon said radiant absorbers whereby said reflector means is aligned with said source such that none of said indirect radiation is blocked by said source;

said reflector means defining:

a first elongate cavity means having an inwardly positioned end and an outwardly positioned end for directing radiant energy from said radiant energy source to a first radiant absorber located at a focus of said first cavity; and

a second elongate cavity means having and inwardly positioned end and an outwardly positioned end for directing radiant energy from said radiant energy source to a second radiant absorber located at a focus of said second cavity;

said first elongate cavity means and said second elongate cavity means each terminating at a common opening at said inwardly positioned ends thereof whereby said first cavity means and said second cavity means are positioned in contiguous relationship;

said radiant energy source being positioned at said common opening;

said outwardly positioned end of said first elongate cavity means terminating in a first outwardly positioned opening with said first radiant absorber being positioned outside of said first cavity means adjacent said first opening;

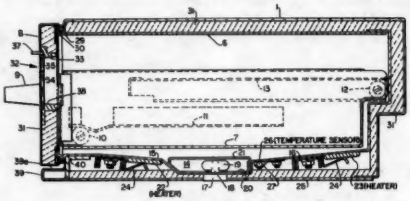
said outwardly positioned end of said second elongate cavity means terminating in a second outwardly positioned opening with said second radiant absorber being positioned outside of said second cavity means adjacent said second opening.

4,605,840

HORIZONTAL HOLDING CABINET FOR PREPARED FOOD

Peter J. Koopman, Richmond, Ind., assignor to Henny Penny Corporation, Eaton, Ohio

Filed Jul. 27, 1984, Ser. No. 635,119
Int. Cl.[4] F27D *7/02*
U.S. Cl. 219—401 **18 Claims**



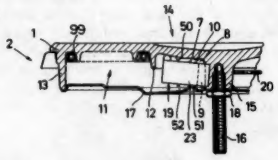
1. A horizontal holding cabinet comprising an elongated housing, a plurality of modules mounted within said housing in side-by-side relation, each of said modules comprising enclosing top, bottom, side and rear walls defining a drawer receiving cavity having an open front, a drawer assembly slidably received in said cavity, said drawer assembly having a front panel adapted to close the open front of the cavity, a heating element juxtaposed to the outersurface of a wall of said module to heat the cavity by conduction, and a water reservoir formed in the bottom wall of said cavity, whereby water vapor may be released within the cavity.

4,605,841

THERMOSTAT FOR ELECTRIC HOTPLATE

Karl Fischer, Oberderingen; Felix Schreder, Oberderdingen, and Robert Kicherer, Knittlingen, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc und Fischer, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,104
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 8219461[U]; Jul. 14, 1982, 3226264; Sep. 28, 1982, 8227145[U]; Jan. 20, 1983, 3301689
Int. Cl.[4] H05B *3/68*
U.S. Cl. 219—449 **25 Claims**



1. An electric hotplate comprising:

a hotplate body including a heated zone having heating resistors and electric circuitry for connecting the resistors to a source of electrical energy, said circuitry including a thermostat having:

a casing formed in one piece from an insulating material with

a bottom and four side walls defining one open-sided recess therebetween; and, a snap-action switch, a support and a bi-metallic strip mounted on the support and acting on the switch, the casing having slots formed therein for fixing the switch, support and strip in the recess, the improvement comprising:

the recess remaining open at the one side when the casing is mounted on the hotplate body and in contact therewith; and

the support and the slots having locking means for preventing movement of the support out of the recess, the locking means including interfitting locking structure on the support and formed interiorly on at least one of the side walls, which structure can be brought to mutual engagement by movement of the support substantially parallel to the bottom of the casing.

4,605,842

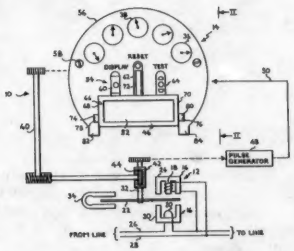
SPRING-LOADED INSTALLATION FOR ELECTRONIC REGISTER MODULE

Peter F. Losapio, Dover, N.H., assignor to General Electric Company, Somersworth, N.H.

Filed Sep. 5, 1985, Ser. No. 772,700

Int. Cl.[4] G01R *19/16*; G06F *15/20*

U.S. Cl. 235—1 D **9 Claims**



1. An electronic register and meter frame for an electric meter comprising:

an electronic register module;

said meter frame including at least a face plate and a back plate;

means for affixing said back plate spaced a predetermined distance from said face plate, thereby providing a predetermined space therebetween;

said electronic register module including a skid plate affixed thereto;

said skid plate including at least a first cantilevered spring finger thereon;

a first button in said first cantilevered spring finger;

said first button contacting and sliding upon said back plate during insertion and removal of said electronic register module, and said first cantilevered spring finger providing a first resilient force urging said electronic register module toward said face plate; and

guidance means at a rear surface of said back plate for providing side-to-side guidance of said at least a first button during an intermediate stage of said insertion and removal.

4,605,843

EASY ACCESS TICKET TRANSPORT

Kenneth R. Aubrey, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Apr. 18, 1985, Ser. No. 724,652

Int. Cl.[4] G06K *13/00*; G07B *15/00*

U.S. Cl. 235—33 **20 Claims**

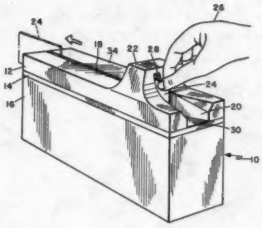
1. A ticket transport for processing fare tickets received from a patron comprising:

ticket transport means having an open longitudinal slot for receiving and processing fare tickets,

read means for reading information from fare tickets when fare tickets move longitudinally in said slot,

write means for writing information on fare tickets when fare tickets move longitudinally in said slot,

said slot being open at the entry for receiving fare tickets,



moving means for grasping fare tickets at the open end of said slot and moving fare tickets in said slot with a portion of the fare tickets projecting out of said slot,

and enclosure means positioned over said slot adjacent the open end of said slot for covering a portion of the fare ticket, whereby fare tickets are removable from the patron's grasp when the patron inserts the fare ticket in the open end of said slot with the patron being able to grasp a portion of the fare ticket while in said slot.

4,605,844

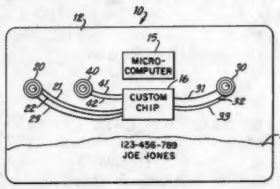
COMPUTERIZED TRANSACTION CARD WITH INDUCTIVE DATA TRANSFER

Douglas E. Haggan, Somerset County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 11, 1985, Ser. No. 700,152

Int. Cl.[4] G06K *5/00*

U.S. Cl. 235—380 **16 Claims**



1. The improvement in a computerized transaction card insertable in a receptor therefor and containing microcomputer means, a power-transfer coil, and a power-transfer ferromagnetic member adapted when said card is in said receptor to flux link said coil with transformer primary means in said receptor for transfer of energy from said receptor to said microcomputer means to provide therefor both operating power and a clock signal transmitted to said coil from said receptor, said improvement comprising: a data-transfer coil in said card, a data-transfer ferromagnetic member juxtaposed in said card with said data-transfer coil, such coil and member being spaced in said card away from said power-transfer coil and member to be magnetically isolated therefrom and said data-transfer member being adapted when said card is in said receptor to flux link said data-transfer coil with inductor means in said receptor, and circuit means coupled to said card with said data-transfer coil for implementing transfer of data between said receptor and microcomputer means at least partly by a modulated wave which is produced by modulation of a carrier signal by a data signal, and which constitutes at least a component of the wave-

form both of current in said data-transfer coil and of magnetic flux linking such coil with said inductor means.

4,605,845

DETECTABLE CARD AND ENTRY AND DEPARTURE CHECKING APPARATUS UTILIZING THE SAME

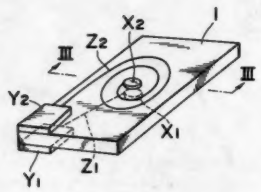
Shigekazu Takeda, 21-9, Nishimine-machi, Ohta-ku, Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 555,212

Claims priority, application Japan, Dec. 14, 1982, 57-187941[U]; Feb. 14, 1983, 58-19067[U]

Int. Cl.⁴ G06K *5/00*

U.S. Cl. 235—382 **8 Claims**



1. A detectable card shaped detector comprising:

a sheet substrate having a predetermined thickness and dielectric constant and made of a synthetic resin;

a first capacitor including a pair of central electrodes bonded to opposite surfaces of said substrate at a central portion thereof;

a second capacitor including a pair of peripheral electrodes bonded to opposite surfaces of said substrate at peripheries thereof;

a spiral conductor interconnecting one central electrode and one peripheral electrode which are disposed on one side of said substrate, said spiral conductor forming an inductance of an LC tuning circuit;

inner films made of a low melting-point synthetic resin and fused to the opposite surfaces of said substrate; and

outer films respectively overlying said inner films and made of a synthetic film, peripheries of said inner and outer films being hermetically fused together.

4,605,846

OPTICALLY READABLE CARD CARRYING DIGITAL DATA, AND AN ACCESS CONTROL SYSTEM USING SAID CARD

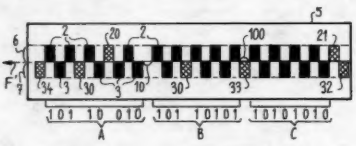
Bernard Duret, Brissac-Quince; Guido G. Dall'oro, Angers; Alain Jollivet, Beaufort, and Annie M. Szeger, Angers, all of France, assignors to Societe d'Electronique de la Region Pays de Loire, Paris, France

Filed Mar. 7, 1984, Ser. No. 586,918

Claims priority, application France, Mar. 11, 1983, 83 04054

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 235—468 **11 Claims**



1. An optically readable card for carrying a digital data message, comprising:

at least one succession of marks and spaces having respective different optical properties, the marks and spaces being detectable by an opto-electronic pick-up means, the pick-up means including a source of light radiation and a detector therefor;

wherein the succession of marks includes genuine data-significant marks having a first optical spectral response to light emitted by the source of light radiation, the genuine data-significant marks being interspersed with dummy or decoy marks having the same appearance visually and photographically as the genuine data-significant marks, the dummy or decoy marks responding to light emitted by the source of light radiation with a second optical spectral response, the second response being analogous to the response of the spaces to the light radiation.

4,605,847

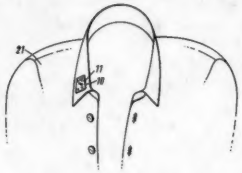
METHOD AND APPARATUS FOR THE CODED TAGGING OF ARTICLES, PARTICULARLY GARMENTS

Hermut Schittko, 9, Baumschulenstrasse, D-2072 Bargteheide, and Peter Schultz, 2/145, Kieler Strasse, D-2085 Quickborn, both of Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,608

Int. Cl.⁴ G06K *7/12*

U.S. Cl. 235—471 **22 Claims**



1. A method for the coded tagging of articles, such as garments, comprising securing to each of a plurality of optically opaque articles a tagging element bearing coded information in the form of portions of the element which permit the passage therethrough of a form of radiation which also passes through the optically opaque material of the articles but to which the rest of the element is opaque, conveying at least the portions of the articles bearing the tagging elements in succession between an emitter and a detector of said form of radiation, said detector producing an image of each tagging element which is scanned by a television camera the output of which is processed by a computer to store, display and/or process the coded information on the element.

4,605,848

PHOTOSENSOR AND OUTPUT CONTROL THEREFOR

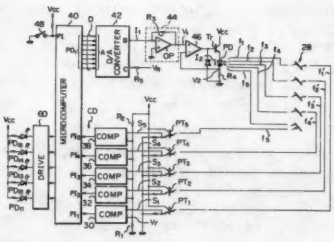
Mutsuo Ogawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,802

Claims priority, application Japan, Oct. 18, 1982, 57-181347

Int. Cl.⁴ G01J *1/32*

U.S. Cl. 250—205 **9 Claims**



1. A photosensor control apparatus comprising:

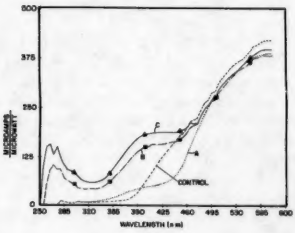
one light emitting means;
a plurality of photosensor means;
optical path means for conveying light from the light emitting means to all of the photosensor means;
computing means for feeding an output signal to the light emitting means, the quantity of light produced by the light emitting means corresponding to the magnitude of the output signal; and
switching means for sequentially connecting outputs of the photosensor means to the computing means;
the computing means including means, in response to each individual photosensor means being connected thereto by the switching means, for progressively increasing the value of the output signal fed to the light emitting means from an initial value, sensing the output level of said individual photosensor means, comparing said output level with a predetermined value and storing a value of the output signal at which said output level is substantially equal to the predetermined value.

4,605,849

PHOTOSENSITIVE DEVICES HAVING ENHANCED BLUE LIGHT RESPONSE

Peter O. Kliem, Weston; Alan B. Fischer, Cambridge, and Shai Inbar, Brookline, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 31, 1984, Ser. No. 666,890
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—216 **6 Claims**



1. A photosensitive element having enhanced blue light photoresponse comprising a solid state photosensitive device carrying on a surface thereof a thin layer comprising a donor dye and an acceptor dye uniformly dispersed in an optically transparent polymeric binder material, wherein said donor dye absorbs light in the blue region of the spectrum and said acceptor dye absorbs light in the green region of the spectrum, there is substantial overlap between the fluorescence emission spectrum of the donor dye and the absorption spectrum of the acceptor dye, said donor and acceptor dyes being present in relative amounts such that said donor dye is adapted to transfer at least a substantial portion of the energy from its singlet excited state nonradiatively to said acceptor dye.

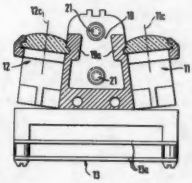
4,605,850

LIGHT BARRIER APPARATUS FOR MONITORING DOORWAYS

Christoph Anselment, and Karl H. Sackmann, both of Waldkirch, Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Jun. 5, 1984, Ser. No. 617,384
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320528
Int. Cl.⁴ G08B *13/18*
U.S. Cl. 250—221 **11 Claims**

1. Light barrier apparatus for monitoring doorways, the apparatus comprising a base member; a housing mountable over said base member, said housing having first and second oppositely disposed sides; first and second windows disposed in respective ones of said first and second sides, first and second light transmitter/receiver devices disposed within said housing and having respective substantially vertically directed optical axes, said optical axes being spaced apart from one another and lying in a common plane; first and second deflecting mirrors each mounted within said housing on said base member by a respective universally adjustable mounting, each of said first and second deflecting mirrors being positioned to deflect a respective substantially vertically directed beam of light from a respective one of said first and second light transmitter/receiver devices into a substantially horizontal direction and out of said housing through a respectively associated one of said first and second windows; first and second retroreflectors mountable outside of said housing, each said retroreflector being mounted, in operation, facing a respective one of said windows for reflecting the associated substantially horizontally directed beam of light emerging from that window back through that window and onto the associated one of said first and second deflecting mirrors for deflection back to the



associated one of said light transmitter/receiver devices; electronic circuitry associated with said first and second transmitter/receiver devices, said electronic circuitry having a first set of electrical connection terminals; a second set of complementary electrical connection terminals provided within said housing on said base member, said first and second sets of electrical connection terminals being connectable with each other; and a support element; wherein said first and second transmitter/receiver devices and said electronic circuitry are connected together and mounted on said support element to form a unit, said unit being releasably connectable to said base member and being removable from said base member by movement in a direction at right angles to said plane; and wherein said base member includes a profiled pedestal extending at right angles to said common plane, and wherein said support element of said unit has an aperture having a profile the same as that of said profiled pedestal, and being slidable over said pedestal during movement of said unit in said direction at right angles to said plane.

4,605,851

PROCESS AND DEVICE FOR DETECTING FOREIGN BODIES IN A LIQUID

Pierre H. M. Ometz, and Jacques A. L. Labrador, both of Gironde, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

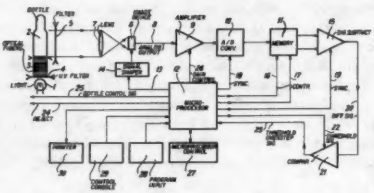
Filed Jan. 31, 1983, Ser. No. 462,448
Claims priority, application France, Feb. 1, 1982, 82 01542
Int. Cl.⁴ G01N *9/04*
U.S. Cl. 250—223 B **13 Claims**

1. The process for detecting foreign bodies, particularly solids, in a liquid contained in at least one recipient transparent to a certain light, whereby the liquid is placed in movement and is illuminated so that an image thereof produced by reflection, diffraction or attenuation, corresponding substantially to all the continuous apparent surface of the liquid contained in said recipient, is formed on a light sensitive surface,

wherein, at an initial instant, a first image of said apparent surface as formed on said light sensitive surface is analyzed point by point, and the analog values of the results of this analysis are digitalized and memorized;

at a subsequent instant, a second image is analyzed point by point, the analog values of the results of the second analysis are digitalized and compared by digital subtraction point by point from the memorized results of the first analysis, and

the numerical value of each of said digital differences is compared with at least one pre-established digital numerical threshold indicative of foreign bodies considered as inadmissible,



wherein the value of said threshold significant of comparison varies as a function of time to take into account the slowing down of the movement of said liquid in the recipient and to obtain a substantially constant threshold of detection of the inadmissable foreign bodies, and wherein the difference of illumination taken into account on two different images, of which at least one is memorized, is compared with said varied threshold of detection.

4,605,852

CONDENSATION PREVENTION APPARATUS

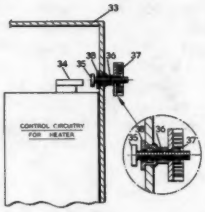
Allen D. Muirhead, Rossendale, England, assignor to Unicell Limited, Stockport, England

Filed Sep. 21, 1983, Ser. No. 534,189

Claims priority, application United Kingdom, Sep. 22, 1982, 8227084

Int. Cl.[4] G01D *5/34*

U.S. Cl. 250—231 R **7 Claims**



1. An apparatus for preventing the formation of condensation within a cabinet, comprising a radiation source, radiation responsive means producing an output signal corresponding to the amount of radiation incident thereon from the source, a reflective surface positioned so as to reflect radiation from the source onto the radiation responsive means, which reflective surface is exposed to the conditions within the cabinet, means connected to an output of the radiation responsive means for detecting a reduction in the output of the radiation responsive means as a result of the formation of condensation on the reflective surface, and means for controlling the conditions within the cabinet to evaporate any detected condensation, the reflective surface being thermally linked to the exterior of the cabinet so that the temperature thereof responds more rapidly to changes in the external ambient temperature than does the interior of the cabinet, whereby the reflective surface is prone to the formation of condensation thereon before the interior of the cabinet and the contents thereof.

4,605,853

DETECTION DEVICE

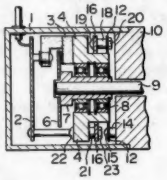
Shoji Kumada, and Hideyuki Asai, both of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Japan

Filed Sep. 27, 1984, Ser. No. 655,373

Claims priority, application Japan, Nov. 9, 1983, 58-173359[U]

Int. Cl.[4] G01D *5/36*

U.S. Cl. 250—231 SE **2 Claims**



1. In a detection device comprising a rotary detection section attached to a hollow shaft fixedly connected through its hollow to one end portion of a rotary shaft of a drive motor the load of which is coupled to the other end portion opposite to said one end portion, and a fixed detection section supported by a fixed housing at a side opposite to said load of said drive motor and mounted through a bearing on said hollow shaft; the detection device in which a plate spring generally of a ring shape is mounted on said fixed housing in spaced relation thereto, said plate spring having at least in part an elastic portion whose resilient force is directed along an axial direction of said rotary shaft under said mounting condition of said plate spring to said fixed housing; and a supporting plate generally of a ring shape having a plurality of elongated apertures formed therein along an concentric line relative to the center of said plate mounted on said plate spring in spaced relation thereto; and wherein said fixed detection section is fixedly connected with screws through said elongated apertures to said supporting plate, said screws being movable freely for adjustment along said concentric line relative to the center of said plate within said apertures.

4,605,854

MEASUREMENT OF FORMATION POROSITY USING FAST NEUTRON SPECTROSCOPY

Harry D. Smith, Jr., Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 16, 1984, Ser. No. 631,353

Int. Cl.[4] G01V *5/00*

U.S. Cl. 250—266 **7 Claims**

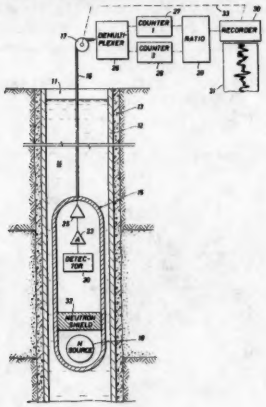
1. A method for determining the porosity of earth formations in the vicinity of a well borehole, comprising:

(a) irradiating the earth formations in the vicinity of the well borehole with a source of fast neutrons,

(b) detecting an energy spectrum of the fast neutrons at a single spaced distance from the neutron source in the borehole and generating a plurality of energy related pulse height spectral signals representative thereof, and

(c) deriving from the fast neutron spectral signals a measurement signal functionally related to the porosity of the earth formations in the vicinity of the borehole by forming

a ratio of the signals representing the count rates observed in a first pulse height range of the observed fast neutron



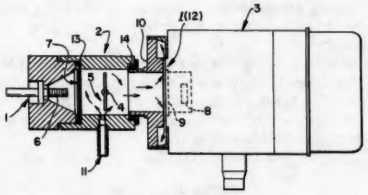
energy spectrum to those signals representing the count rates observed in a second pulse height range thereof.

4,605,855

GAS ANALYZER WITH COMPACT CELL STRUCTURE

Takeshi Yamada, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Aug. 24, 1984, Ser. No. 644,104
Claims priority, application Japan, Aug. 30, 1983, 58-134971[U]
Int. Cl.[4] G01J *1/00*
U.S. Cl. 250—343 6 Claims



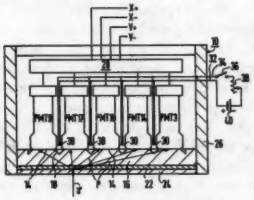
1. A gas analyzer comprising: a light source having a window; an open-ended, hollow cylinder aligned with said light source and through which the light from said light source passes; a detector at the other end of said cell and having a window for receiving the light which has passed through said hollow cylinder; a chopper in said hollow cylinder and rotatable around an axis perpendicular to the optical path through said hollow cylinder for interrupting the light passing along said optical path; said hollow cylinder having a gas inlet therein at a portion where the optical path for said cell is not blocked thereby; the ends of said hollow cylinder being adjacent the light source window and the detector window which serve as cell windows, respectively, at least one of said windows being spaced from the end of said hollow cylinder to define an annular gap therebetween constituting a gas outlet for causing gas leaving the cell to flow out through the end corner of the cell adjacent said one window.

4,605,856

METHOD AND DEVICE FOR STABILIZING PHOTOMULTIPLIER TUBES OF A RADIATION IMAGE DEVICE AGAINST DRIFT

Dennis E. Persyk, Barrington, and Keith A. Ritter, Addison, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Nov. 9, 1983, Ser. No. 549,937
Int. Cl.[4] G01T *1/202*
U.S. Cl. 250—363 S 20 Claims



1. A method for stabilizing the gain of a plurality of photomultiplier tubes of a radiation image device against drift by illuminating the photomultiplier tubes with light, comprising the steps of:

(a) arranging a predetermined number of said photomultiplier tubes in an array for operation in the radiation image device; and

(b) illuminating the complete array with light having an intensity to produce an average anode current in each of the photomultiplier tubes which is in the range of 1 to 50 μA; and

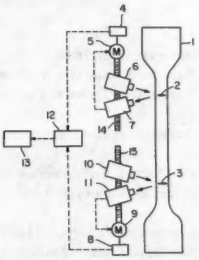
(c) timing the illumination for a predetermined interval of at least one day to obtain stabilization of the plurality of photomultiplier tubes.

4,605,857

TENSILE TESTER

Sunao Ninomiya, Ichihara; Yasuhiro Miura, Chiba; Hiromu Iwata, Kisarazu, and Shuji Matsuyama, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jun. 8, 1984, Ser. No. 618,607
Claims priority, application Japan, Jun. 20, 1983, 58-110535
Int. Cl.[4] G01T *1/22, 1/24*
U.S. Cl. 250—372 5 Claims



1. A tensile tester for use in detecting the amount of elongation in a stationary specimen marked with at least a pair of fluorescent coating bench marks comprising at least two pairs of projector-optic arrangements spaced along the length of and in the elongation direction of said specimen, each pair of projector-optic arrangements comprising an ultraviolet lamp projector means for irradiating ultraviolet light onto the respec-

tive one of said bench marks and optic means including a detector means for detecting luminescent light rays reflected from the respective one of said ultraviolet light irradiated bench marks on said specimen caused by irradiation from said projector means, said detecting means measuring the amount of incident light from said bench mark;

support metans for independently supporting each of said projector-optic arrangement for movement back and forth along the length of at least a portion of said specimen adjacent a respective one of said bench marks;

drive means for independently driving said projector-optic arrangement along said portion of said specimen;

elongation detector means for each said projector-optic arrangements for transmitting respective displacement signals indicative of the amount of movement of said projector-optic arrangements; and

control means for independently deactivating said drive means for stopping the movement of each said projector-optic arrangement when said detector means in said optic means detects said luminescent light rays from a respective one of said bench marks; and

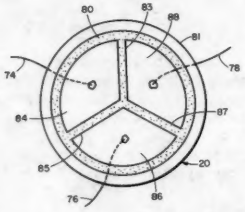
difference determining means responsive to both of said elongation detector means for determining and indicating the spacing between said bench marks.

4,605,858

PERSONAL RADIATION DOSIMETER

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Nov. 9, 1984, Ser. No. 669,884
Int. Cl.[4] G01T *1/18*
U.S. Cl. 250—374 **6 Claims**



1. A radiation dosimeter comprising:

at least a first capacitive ionization chamber adapted to gradually discharge in the presence of incident radiation;

a voltage source;

a load resistor coupled to said voltage source;

a first switch means coupled to said load resistor and said voltage source to form a first in-series circuit comprising said voltage source, said load resistor and said first switch means;

a second switch means coupled to said load resistor and said voltage source to form a second in-series circuit comprising said voltage source, said load resistor, said second switch means and said at least first capacitive ionization chamber;

peak voltage sensing means coupled across said load resistor for providing a peak voltage signal; and

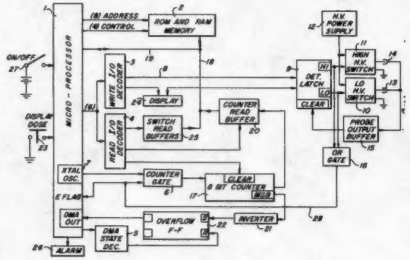
calculating means responsive to peak voltage measurements taken across said load resistor as said first and second switch means are sequentially actuated for calculating the amount of radiation incident on said dosimeter from said peak voltage measurements.

4,605,859

RADIATION MEASURING APPARATUS

Elmo J. DiIanni, Mountain Lake, N.J.; Harold J. Cooley, Spring Valley, N.Y.; Michio Fujita, Philadelphia, Pa., and Charles V. Noback, Cresskill, N.J., assignors to Nuclear Research Corp., Warrington, Pa.

Filed Dec. 19, 1983, Ser. No. 562,985
Int. Cl.[4] G01T *1/18*
U.S. Cl. 250—374 **30 Claims**



1. Apparatus for measuring radiation field strength comprising in combination,

(a) a biased potential radiation detector having an output circuit, said detector being of the type that is effective when biased to respond to impingement of radiation by generating an output pulse at its output circuit, and when not biased being ineffective to generate an output pulse when impinged by radiation,

(b) biasing means operatively coupled to said radiation detector for selectively biasing said radiation detector to generate an output pulse in response to impingement by radiation,

(c) time counting means including timing control means operable to start and terminate time counting, said radiation detector output circuit being operatively coupled to said time counting means and being effective upon generation of an output pulse to cause said time counting means to terminate time counting,

(d) master control means operatively coupled to

(1) said biasing means to selectively cause said biasing means to bias said radiation detector to respond to impingement by radiation,

(2) said time counting means and effective to cause said time counting means to start time counting simultaneously with the operative biasing of said radiation detector, said master control means receiving a signal when said radiation detector generates an output pulse.

4,605,860

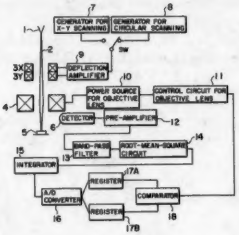
APPARATUS FOR FOCUSING A CHARGED PARTICLE BEAM ONTO A SPECIMEN

Satoru Fukuhara, Kokubunji; Mikio Ichihashi, Kodaira; Hisaya Murakoshi, and Shigemitsu Seitoh, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1984, Ser. No. 654,457
Claims priority, application Japan, Sep. 28, 1983, 58-177954
Int. Cl.[4] G01K *1/08;* H01J *3/14*
U.S. Cl. 250—397 **6 Claims**

1. An apparatus for focusing a charged particle beam onto a specimen, comprising scanning means for scanning a preformed standard pattern with a charged particle beam, converging means having a current controlled lens means for converging said charged particle beam onto a specimen, detecting means for detecting secondary charged particles emitted as a result of scanning said standard pattern by said scanning means, means for deriving a standard frequency component of the detected signal from said detecting means determined by the period of scanning with said charged particle beam and the shape of the portion of said standard pattern in

the region being scanned with said charged particle beam, and means for controlling the current for said lens means of said



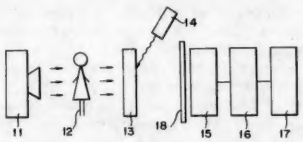
converging means to find the maximum value of the amplitude of said standard frequency component thereby identifying attainment of focusing of said charged particle beam.

4,605,861

RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Takashi Nakamura, and Kenji Takahashi, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Apr. 15, 1985, Ser. No. 723,357
Claims priority, application Japan, Apr. 13, 1984, 59-74364
Int. Cl.[4] H05B *33/00*
U.S. Cl. 250—484.1 **8 Claims**



1. A radiation image recording and reproducing method comprising steps of:

(i) causing a divalent europium activated alkaline earth metal hydride halide phosphor having the formula (I):

$$M^{II}HX:xEu^{2+} \quad (I)$$

in which M^{II} is at least one alkaline earth metal selected from the group consisting of Ca, Sr and Ba; X is at least one halogen selected from the group consisting of Cl, Br and I; and x is a number satisfying the condition of $0<x\leqq 0.2$, to absorb a radiation having passed through an object or having radiated from an object;

(ii) exciting said phosphor with an electromagnetic wave having a wavelength within the range of 560–1000 nm to release the radiation energy stored therein as light emission; and

(iii) detecting the emitted light.

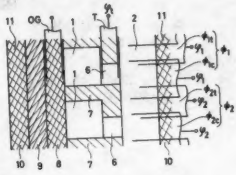
4,605,862

SOLID STATE IMAGE PICKUP APPARATUS

Kaneyoshi Takeshita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP83/00040, § 371 Date Oct. 18, 1983, § 102(e) Date Oct. 18, 1983, PCT Pub. No. WO83/03031, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 10, 1983, Ser. No. 557,169
Claims priority, application Japan, Feb. 19, 1982, 57-25731
Int. Cl.[4] H04N *3/14, 5/335*
U.S. Cl. 250—578 **2 Claims**

1. A solid state image pickup apparatus comprising a solid state image pickup device of the interline transfer type which has a photodetector (1) for producing signal charges in response to light received thereon and for storing the signal charges produced therein, a transfer gate area (6) formed adjacent said photodetector (1) for reading out the signal charges stored in the photodetectors (1), and vertical transfer portions (2) formed adjacent said transfer gate area (6) for transferring the signal charges read out from the photodetectors (1), said photodetectors (1), and said transfer portions (2) are free of a light shielding layer (11), a shutter mechanism is provided for the solid state image pickup device, and when the



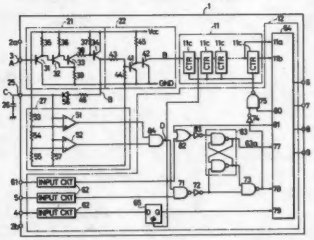
shutter mechanism is opened the relationship $P_f \leqq P_t < P_s$, where P_s, P_t and P_r are the potentials of the photodector (1), the transfer gate area (6) and the transfer portion (2), respectively are maintained during a light receiving period, and when the shutter mechanism is shut the relationship $P_s \leqq P_t < P_r$ is maintained during a reading out period, and when the shutter mechanism is shut the relationship of $P_t < P_s$ and $P_t < P_r$ is maintained during a charge transfer period, so as to produce an image pickup output signal in response to the signal charges transferred by the transfer portions (2).

4,605,863

DIGITAL CONTROL CIRCUIT

Kenzi Toudo; Motoshi Yiyanaka, and Yoshiki Hayata, all of Yanai, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 536,501
Claims priority, application Japan, Oct. 27, 1982, 57-187419
Int. Cl.[4] H03K *3/00, 5/19;* G01R *29/027*
U.S. Cl. 307—269 **15 Claims**



1. A digital control circuit comprising means for providing a clock pulse signal of predetermined magnitude; control means responsive to said clock pulse signal and at least one control signal for generating a first signal for controlling a load; means including a capacitor connected to said clock pulse signal providing means through a charge resistor for causing said capacitor to be charged by said clock pulse signal to a voltage level determined by the magnitude of the pulses of said clock pulse signal; discharge means including a discharge resistor connected in parallel to said capacitor for holding the charge on said capacitor at said predetermined level when said capacitor is receiving said clock pulse signal of predetermined magnitude; voltage detecting means connected to said capacitor for detecting the voltage of said capacitor and including means for generating a second signal when the charged voltage of said capacitor is unequal to a preset voltage; and means connected

to said voltage detection means for preventing generation of said first signal by said control means in response to receipt of said second signal.

4,605,864

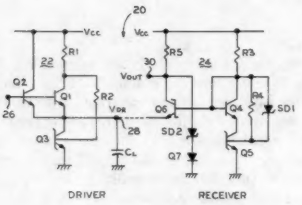
AFL (ADVANCED FAST LOGIC) LINE DRIVER CIRCUIT

Hemmige D. Varadarajan, Sunnyvale, and Nader Vasseghi, Mountain View, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 4, 1985, Ser. No. 688,719

Int. Cl.[4] H03K *19/092, 19/01, 17/04, 17/60*

U.S. Cl. 307—270 **16 Claims**



1. A line driver circuit adapted for driving large capacitive lines comprising:

a driver circuit section including:

a pair of first and second bipolar transistors being connected together and to an input terminal, the collector of said first transistor being connected to a supply potential via a first resistor and the collector of said second transistor being connected to the supply potential;

a first Schottky transistor, the collector of said Schottky transistor being connected to the emitters of said first and second transistors and to an output node, the emitter of said Schottky transistor being connected to a ground potential;

a second resistor having its one end connected to the collector of the first transistor and its other end connected to the base of said Schottky transistor: and

a capacitive load being connected to the output node; and

a receiver circuit section including:

a third bipolar transistor, the collector of said third transistor being connected to the supply potential via a third resistor and to its base;

a second Schottky transistor having the collector connected to the emitter of said third transistor and its emitter connected to the ground potential;

a fourth resistor having its one end connected to the collector of said third transistor and its other end connected to the base of said second Schottky transistor;

a first Schottky diode having its anode connected to the collector of said third transistor and its cathode connected to the base of said second Schottky transistor;

a third Schottky transistor having its base connected to the base of said third transistor, its collector connected to the supply potential via a fifth resistor and to an output terminal, and its emitter connected to the output node of said driver circuit section;

a second Schottky diode having its anode connected to the output terminal; and

a fourth bipolar transistor connected as a diode and having its anode connected to the cathode of said second Schottky diode and its cathode connected to a ground potential.

4,605,865

INPUT DRIVE APPARATUS FOR POWER TRANSISTOR

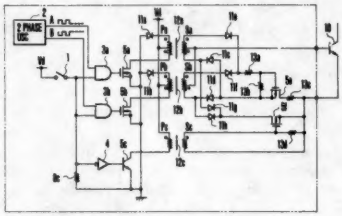
Itsuo Yuzurihara, Zama, Japan, assignor to Kyosan Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 26, 1984, Ser. No. 624,633

Claims priority, application Japan, Jul. 4, 1983, 58-121385

Int. Cl.[4] H03K *3/26, 17/60*

U.S. Cl. 307—270 **2 Claims**



1. An input drive apparatus of a power transistor having an input side circuit means and output side circuit means electrically insulated from each other by gaps between primary and secondary windings of at least one first transformer and a second transformer respectively, said input side circuit means including a power source, means for alternately connecting said power source to the primary windings of said at least one first transformer and said second transformer in accordance with a value of an instruction signal for controlling a bias voltage applied across a first and a second electrode of said power transistor, said output side circuit means comprising:

means for connecting a first electrode of said power transistor with a center tap of the secondary winding of said at least one first transformer,

at least one first diode having one electrode connected with one terminal of the secondary winding of the corresponding one of said at least one first transformer,

at least one second diode having one electrode of opposite polarity from that of the first diode connected with the other terminal of the secondary winding of the corresponding one of said at least one first transformer,

first transistor means having a first terminal connected with the second electrode of said power transistor, a second terminal connected with the other electrode of the second diode and a third terminal connected with the other electrode of the first diode, an internal current path from the first terminal to the second terminal of said first transistor means being established when a voltage is applied across the second and third terminals thereof,

at least one third diode having one electrode of opposite polarity from that of the second diode connected with the other terminal of the secondary winding of the corresponding one of said at least one first transformer,

second transistor means having a fourth terminal connected with the other electrode of the corresponding one of said third diode, a fifth terminal connected with the second electrode of said power transistor and sixth and seventh terminals respectively connected with one and the other terminals of the secondary winding of said second transformer, an internal current path from the fourth terminal to the fifth terminal being established when a voltage is applied across the sixth and seventh terminals; and

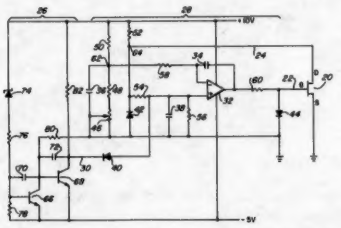
said input side circuit means comprising means for connecting each center tap of the primary winding of said at least one first transformer with said power source, and at least one fourth diode having one electrode connected with one terminal of the primary winding of the corresponding one of said at least one first transformer and the other electrode grounded so that the electromagnetic energy stored in said first transformer means is regenerated to said power source after charge carriers accumulated in said power transistor have been extinguished.

4,605,866

D.C. BIASSING OF MESFETS TO PREVENT OSCILLATION DURING POWER SUPPLY SWITCHING

David R. Conn, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 11, 1984, Ser. No. 598,715
Int. Cl.[4] G01R 19/165
U.S. Cl. 307—296 R 10 Claims



1. A d.c. biassing circuit for a MESFET having a gate and a controlled path including a drain and a source, comprising:

means connected to the controlled path for deriving current therefor from a supply voltage:

regulating means connected to the gate of the MESFET for controlling the gate to regulate the current in the controlled path; and

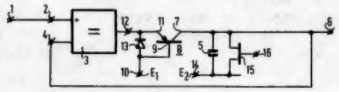
switching means responsive to the supply voltage being below a predetermined level for controlling the regulating means to limit the current in the controlled path.

4,605,867

PEAK DETECTOR

Johannus C. D. M. Veehof, Enschede, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1984, Ser. No. 607,335
Claims priority, application Netherlands, May 6, 1983, 8301602
Int. Cl.[4] H03K 5/153; G01R 19/04
U.S. Cl. 307—351 19 Claims



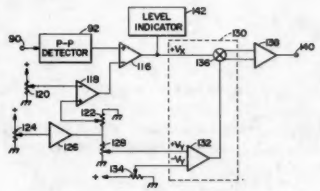
1. A peak detector comprising a capacitor storage element for storing a voltage value which is a measure of the peak value of an input voltage to be applied to the peak detector, a voltage comparator circuit having a first input for the input voltage, a second input coupled to the capacitor, and an output, a transistor having a collector coupled to the capacitor and a base-emitter path coupled to said comparator circuit output and to a voltage source supplying a fixed voltage E1 with the base of the transistor connected to the voltage source E_1 and the emitter to said comparator circuit output so that the transistor is operated in common base arrangement, and a diode connected between the base and the emitter of the transistor in anti-parallel with the base-emitter diode junction.

4,605,868

PEAK-TO-PEAK DETECTION APPARATUS

Bruce J. Penney, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 479,390, Mar. 28, 1983, abandoned.
This application Oct. 7, 1985, Ser. No. 786,132
Int. Cl.[4] H03K 5/153
U.S. Cl. 307—351 3 Claims



1. Peak-to-peak detection apparatus comprising a peak-to-peak detector which has an input terminal for receiving an input signal having an a.c. component and also has an output terminal and defines a signal path between the input terminal and the output terminal, said peak-to-peak detector including a first diode connected in said signal path and a second diode connected between said signal path and a reference potential level, whereby the detector generates at its output terminal an output signal having a d.c. level and representing the envelope of the input signal applied to its input terminal, said apparatus also comprising means for compensating for the effect on the operating characteristic of the detector of the change in incremental resistance of the diodes with signal level, the compensating means comprising level-shifting means for receiving the output signal of the detector and generating therefrom an output signal having a desired d.c. level, and means for amplifying the output signal of the level-shifting means by an amount dependent on the difference between the d.c. level of the output signal of the detector and said desired d.c. level.

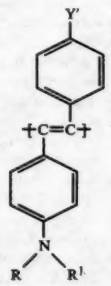
4,605,869

POLYACETYLENIC COMPOSITIONS

Eui W. Choe, Randolph, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 710,766, Mar. 11, 1985. This application Oct. 24, 1985, Ser. No. 791,127
Int. Cl.[4] G02F 2/00
U.S. Cl. 307—425 1 Claim

1. A laser frequency converter device with a polymeric nonlinear optical component comprising an optically transparent medium of a polymer characterized by the recurring monomeric unit:



where R and R^1 are alkyl groups containing between about 1–4 carbon atoms, and R and R^1 taken together with the connecting nitrogen atom form an alicyclic substituent; Y' is a substitu-

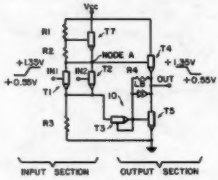
ent selected from nitro, cyano and trifluoromethyl radicals; and the weight average molecular weight of the polymer is in the range between about 1000–500,000.

4,605,870

HIGH SPEED LOW POWER CURRENT CONTROLLED GATE CIRCUIT

Allan H. Dansky, Poughkeepsie, and John P. Norsworthy, Fishkill, both of N.Y., assignors to IBM Corporation, Hopewell Junction, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,613
Int. Cl.[4] H03K *3/33, 17/04, 19/013, 19/088*
U.S. Cl. 307—443 **8 Claims**



1. A high speed, low power, current-controlled logic gate circuit comprising:

a power supply;

a first section including at least a first transistor having a logic input, which corresponds to the input of said gate circuit, and first and second outputs;

a second, push-pull, section having an output, which corresponds to the output of said gate circuit, said second section further including at least interconnected second and third transistors; the second transistor having an input connected to the first output of said first section; the third transistor having an input;

means for coupling the second output of said first section directly to the input of said third transistor, comprising means, including an asymmetrically conductive device and the inherent capacitance of said device, for overdriving and turning ON said third transistor during switching of said gate circuit from a state in which the output is at an UP level to a state in which the output is at a DOWN level;

a resistor, connected to said asymmetrically conductive device so as to form with said device a biasing network for maintaining the third, or active pulldown, transistor in a low current ON state, which is in the microampere range, when the output of said gate circuit is at said UP level, said resistor also being operable at that time for supplying current to forward bias said asymmetrically conductive device, said resistor further providing DC feedback to turn OFF said third transistor when the output of said gate circuit reaches said Down level such that a very low current then flows through said third transistor, said very low current having a value of approximately 1 microampere, which is serveral times lower than said low current;

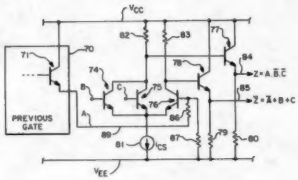
a Schottky diode connected as a dynamic feedback means from the output of said gate circuit to the input of said third transistor, said Schottky diode giving an output voltage undershoot, thereby turning itself ON and turning said third transistor OFF responsive to the output of said gate circuit switching to its DOWN level.

4,605,871

INVERTER FUNCTION LOGIC GATE

John E. Price, Palo Alto, and Larry W. De Clue, Saratoga, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Mar. 12, 1984, Ser. No. 588,476
Int. Cl.[4] H03K *19/086, 19/013, 19/092, 19/20*
U.S. Cl. 307—455 **14 Claims**



1. A bipolar gate circuit for Performing a logical operation on data represented by input signals including a logical operation on the complement of data represented by one of the input signals, comprising:

at least one input transistor;

a resistor connected between the collector of said at least one input transistor and the supply voltage, V_{CC};

at least one level shift input bipolar transistor means having its emitter connected to the emitter of said at least one input transistor and having its base coupled to the input signal whose complementary data is included in said logical operation;

a second resistor connected between the collector of said at least one level shift input bipolar transistor means and said supply voltage, V_{CC};

a current source connected to said common emitter connection of said at least one input transistor and said at least one level shift input bipolar transistor means;

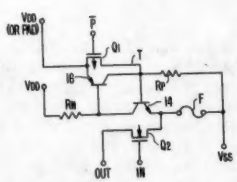
whereby said level shift input pipolar transistor means serves to shift the level of the input signal whose complementary data is included in said logical operation to a level below the standard ECL signal levels so that the signal delivered to the common emitter connection is a level shifted representation of said input signal whose complementary data is included in said logical operation.

4,605,872

PROGRAMMABLE CMOS CIRCUIT FOR USE IN CONNECTING AND DISCONNECTING A SEMICONDUCTOR DEVICE IN A REDUNDANT ELECTRICAL CIRCUIT

Robert D. Rung, Corvallis, Oreg., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 6, 1983, Ser. No. 558,455
Claims priority, application Japan, Dec. 9, 1982, 57-214609
Int. Cl.[4] H03K *17/12*
U.S. Cl. 307—465 **18 Claims**



1. A programmable circuit for a semiconductor device formed on a semiconductor substrate for use in a redundant electrical circuit, said programmable circuit comprising:

an input terminal to receive a programming signal;

a switching device parasitic to said semiconductor device and intrinsic to the structure of said semiconductor substrate, said switching devices being coupled to said input terminal to generate a voltage output in response to receipt of the programming signal by said input terminal; and

disconnect means coupled to said semiconductor device and responsive to the voltage output generated by said switching device for disconnecting said semiconductor device from said redundant electrical circuit in response to the programming signal.

4,605,873

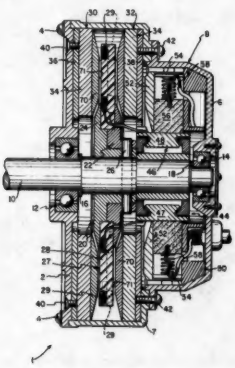
ELECTROMECHANICAL MACHINE

James H. Hahn, Lakeland, Fla., assignor to David H. Rush, Hollywood, Fla.

Continuation-in-part of Ser. No. 334,303, Dec. 24, 1981, which is a continuation of Ser. No. 22,422, Mar. 21, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,480

Int. Cl.[4] H02K *21/76*

U.S. Cl. 310—154 **74 Claims**



1. An electromechanical machine comprising:

a machine housing;

a field producing assembly mounted in said housing so as to define an air gap circumferentially disposed about an axis of rotation, for producing a distribution of magnetic flux in said gap having P periodic extremes of flux density about said axis;

an armature disposed in said gap, said armature and field assembly being mounted for relative rotation, said armature having a circular array of C non-overlapping coils on each of a front and back free thereof, C being an integer greater than P, each coil of the coil array on one armature face being angularly offset about said axis relative to a coil of the coil array on the other armature face by an amount less than 360°/C, each coil of each armature face having the same arcuate extent, said arcuate extent being less than 360°/P.

4,605,874

BRUSHLESS D.C. DYNAMOELECTRIC MACHINE HAVING FERRITE MATERIAL MAGNETIC CIRCUIT

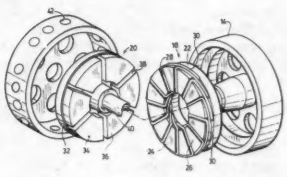
Eric Whiteley, Peterborough, Canada, assignor to Maghemite Inc., Mississauga, Canada

Filed Feb. 20, 1985, Ser. No. 703,388

Claims priority, application United Kingdom, Jun. 12, 1984, 8414953

Int. Cl.[4] H02K *1/16*

U.S. Cl. 310—268 **6 Claims**



1. A brushless D.C. dynamoelectric machine, which comprises:

a disc-like rotor element comprising hard ferrite toroid means providing a plurality of magnetic poles of alternating polarity and mounted for rotation about its axis,

a disc-like stator element comprising soft ferrite toroid means and mounted coaxially with and spaced apart from the rotor element, said soft ferrite toroid means being formed with radially-directed coil winding-receiving slots, and

electrical coil windings mounted to said stator in said slots and each spanning one rotor pole pitch.

4,605,875

PIEZOELECTRIC TRANSDUCER FOR YARN FEELERS, FOR USE ON SPINNING AND WEAVING MACHINES

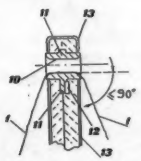
Paolo Bobbola, Vigliano Biellese, Italy, assignor to Roj Electrotex S.p.A., Biella, Italy

Filed Oct. 9, 1984, Ser. No. 658,806

Claims priority, application Italy, Oct. 7, 1983, 23198 A/83

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—323 **1 Claim**



1. A yarn feeler comprising a casing, and within the casing a piezoelectric transducer comprising a ceramic member having a yarn guide formed from said ceramic member and having a hole therethrough, said ceramic member being cemented direclty to a ceramic piezoelectric element within the casing, the size and shape of said ceramic member being such that its resonance frequencies are substantially different from those of the textile machines and devices to which the transducer is to be fitted, said yarn guide projecting from opposite sides of said casing.

4,605,876
PIEZOELECTRIC CERAMIC ENERGY TRAPPING ELECTRONIC DEVICE

Toshio Ogawa, Kyoto, and Toshihiko Kittaka, Shijonawate, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 559,856, Dec. 12, 1983, abandoned, which is a continuation of Ser. No. 342,405, Jan. 25, 1982, abandoned. This application Nov. 7, 1984, Ser. No. 669,055
Claims priority, application Japan, Jan. 28, 1981, 56-11925
Int. Cl.[4] H01L *41/18*
U.S. Cl. 310—358 **8 Claims**

1. A piezoelectric ceramic energy trapping electronic device using the thickness expansion third overtone mode vibration, said device having a composition comprising as a principal component,

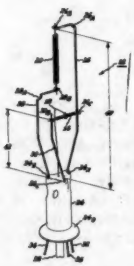
$$[Pb_{(1-3/2x)+\alpha}\ La_x][\ TiO_3,$$

and manganese contained therein as an additive in an amount of 0.1 to 2.0 wt % of MnO_2 with respect to the weight of 1 mole of said principal component, where $0.09 \leqq x \leqq 0.20$, and $-0.20 \leqq \alpha \leqq +0.20$, wherein the temperature coefficient for the third overtone mode vibration in thickness expansion mode (Cfr.t_3) is within the range of -5ppm/°C. to $+5$ppm/°C.

4,605,877
MOUNTING STRUCTURE FOR MULTI-FILAMENTS OF AN INCANDESCENT LAMP

Timothy C. Cho, Mayfield Hts., and Edwin J. Lohrey, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1985, Ser. No. 701,821
Int. Cl.[4] H01J *1/88, 19/42;* H01K *1/18*
U.S. Cl. 313—272 **6 Claims**



1. A multi-filament incandescent lamp adapted to operate at different levels of illumination comprising:

an outer envelope sealed and connected to an electrically conductive screw-in base;

a minor and a major filament;

a three-pillar stem portion for spatially disposing said minor and major filament within said outer envelope, said three-pillar stem portion having an inner and outer lead wires extending through each of the three-pillar portions with one end of each of said outer lead wires appropriately connected to said electrically conductive screw-in base effective to obtain said different levels of illumination, said inner lead wires each having a desired configuration, one of said inner lead wires being common to both of said minor and major filament and having at least two hooked bends for respective clamp connections to one end of each said minor and major filaments, the other two inner lead-in wires each having a hooked bend for a clamped connection to the other respective opposite ends of said minor and major filaments, at least said minor filament being mounted in a transverse manner, each of said transverse filaments being mounted by at least a first and a second of said inner lead wires, at least one of said first and second inner lead wires being shorter than the other, wherein;

said first lead wire has its uppermost crimped connection located at a first predetermined distance relative the upper portion of the three-pillar stem and a first diameter both selected so as to be proportional to the location of a second crimped connection located at a second predetermined distance relative the upper portion of the three-pillar stem and a second diameter both of said second inner lead wire in accordance with the following relationship:

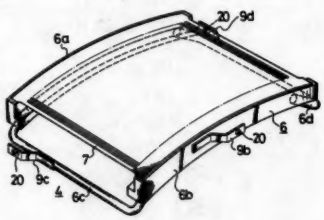
$$\text{second diameter} = \text{first diameter} \times \frac{\text{second distance}}{\text{first distance}} \quad \text{(a)}$$

where the quantity (a) has a value in the range of about one-half ($\frac{1}{2}$) to about one (1).

4,605,878
SUPPORTING DEVICE FOR AN ELECTRON BEAM LANDING POSITION SELECTING MASK OF A COLOR CATHODE RAY TUBE

Koji Saita, Kanagawa; Kenichi Kanehira, and Tomohisa Uba, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,384
Claims priority, application Japan, May 31, 1983, 58-81901[U]
Int. Cl.[4] H01J *29/80*
U.S. Cl. 313—406 **2 Claims**



1. A supporting device for an electron beam landing position selecting mask of a color cathode ray tube having an envelope, a color phosphor screen and an electron gun comprising:

(a) a plurality of conical shaped metal stud pins arranged within an envelope of the color cathode ray tube; and

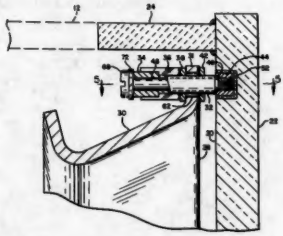
(b) a plurality of spring members attached to said electron beam landing position selecting mask, said spring members being engaged with said metal stud pins so that said electron beam selecting mask is disposed in opposed relation to said color phosphor screen, said spring members having a polygonal engaging aperture at their end portions with which said metal stud pins are engaged, wherein said stud pins contact with said polygonal engaging apertures at three generally opposed points to thereby determine the position of said electron beam selecting mask, the inner peripheral edge of said polygonal engaging aperture and a closely adjacent peripheral surface of said metal stud pins being welded together at at least one point other than said three contact points.

4,605,879

RIGID CRT SHADOW MASK ASSEMBLY

Dale R. Rath, Gales Creek, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 14, 1984, Ser. No. 650,393
Int. Cl.[4] H01J 29/07
U.S. Cl. 313—407 7 Claims



1. A shadow mask/faceplate assembly for a color cathode ray tube, comprising

a faceplate having inner and outer major surfaces,

a shadow mask frame carrying a mask membrane,

first fastener means fixedly secured to said faceplate at plural locations within the periphery of the inner surface of said faceplate, and

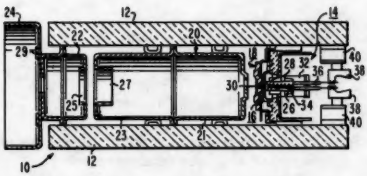
second fastener means in removable, threaded engagement with said first means and secured at corresponding plural locations to said shadow mask frame to rigidly lock said shadow mask/faceplate assembly to reduce vibration.

4,605,880

MULTIBEAM ELECTRON GUN HAVING A CATHODE-GRID SUBASSEMBLY AND METHOD OF ASSEMBLING SAME

Harry E. McCandless, and Sigmund T. Villanyi, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 22, 1984, Ser. No. 643,175
Int. Cl.[4] H01J 29/46, 29/50
U.S. Cl. 313—414 5 Claims



1. In a multibeam electron gun comprising at least two spaced successive electrodes held in position from a common electrically-insulating support, one of said electrodes comprising a metal first plate having at least three precisely spaced beam-defining first apertures therein, the other electrode comprising a composite structure including a metal support plate and a metal second plate, said metal support plate having at least three windows therein, said windows being disposed opposite said beam-defining first apertures, said metal second plate having at least three precisely spaced beam-defining second apertures therein, said common electrically-insulating support and said metal support plate each having a pair of reference apertures therein, said metal first plate and said metal second plate each having a pair of alignment apertures therein, wherein the improvement comprises

said metal second plate being affixed to said metal support plate and having said beam-defining second apertures disposed within said windows of said metal support plate, and

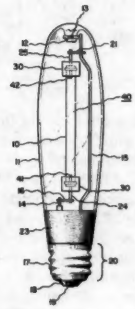
said pairs of alignment apertures in said metal first plate and in said metal second plate being polygonal-shaped, said metal first plate and said metal second plate having two adjacent sides bordering said polygonal-shaped alignment apertures which are mutually aligned with one another so that said polygonal-shaped alignment apertures are mutually aligned with one another and with said reference apertures in said common electrically-insulating support and in said metal support plate, whereby said beam-defining first apertures in said metal first plate and said beam defining second apertures in said metal second plate are aligned along common axes.

4,605,881

HIGH PRESSURE SODIUM IODIDE ARC LAMP WITH EXCESS IODINE

James T. Dakin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,349
Int. Cl.[4] H01J 17/20, 61/18
U.S. Cl. 313—638 7 Claims



1. In a high pressure sodium iodide arc lamp having an arc tube for containing an arc discharge, an arc tube fill comprising

sodium iodide;

xenon buffer gas in an amount providing a xenon partial pressure in the range of about 100 torr and higher at room temperature; and

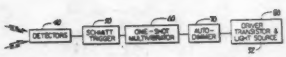
iodine in sufficient quantity to reduce, the partial pressure of sodium at the walls of said arc tube to substantially zero during operation of said lamp.

4,605,882

ELECTRONIC JEWELRY SIMULATING NATURAL FLICKERING LIGHT

Frederick P. DeLuca, 3520 Jewel Dr., Ames, Iowa 50010

Filed Jul. 2, 1984, Ser. No. 627,289
Int. Cl.[4] F21L 15/08; H05B 37/02
U.S. Cl. 315—158 20 Claims



1. Light-emitting electronic jewelry, comprising,

a base item of jewelry,

an electrically operated light-emission means on said jewelry,

an electrical circuit including means for applying an electrical potential across said light-emission means, thereby to emit light therefrom,

a light sensor electrically connected in said circuit,

means for mounting said light sensor on said jewelry for sensing ambient light intensity, and

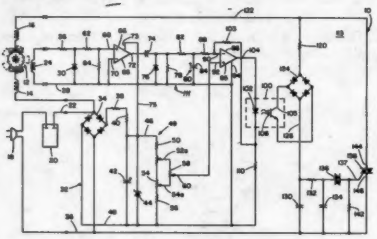
circuit element means electrically connecting said light sensor and light emission means, said circuit element means being operative to intermittently interrupt the electrical potential across said light-emission means in response to changes in ambient light intensity sensed by said light sensor.

4,605,883

MOTOR SPEED CONTROL CIRCUIT

James B. Cockroft, Wauwautosa, Wis., assignor to Sunbeam Corporation, Oak Brook, Ill.

Filed Feb. 5, 1982, Ser. No. 345,972
Int. Cl.[4] G05B 5/00
U.S. Cl. 318—312 **3 Claims**



1. A motor speed control circuit for use in controlling the speed of an electric motor of a household electrical appliance comprising; tachometer means located in proximity with a plurality of blades of a fan in driven connection with an electric motor and producing a tachometer signal when said electric motor rotates said fan blades past said tachometer means, clipping means connected to said tachometer means to produce a clipped tachometer signal having a preselected maximum amplitude, comparator means connected to said clipping means, and producing a rectangular wave signal in response to said clipped tachometer signal received from said clipping means, differentiating means connected to said comparator and receiving said rectangular wave signal therefrom and producing a differentiated pulse signal in response thereto, integrator means connected to said differentiating means and receiving said differentiated pulse signal from said differentiating means and producing a speed signal having an amplitude indicative of a speed of rotation of said electric motor, means for comparing said speed signal to a reference signal and producing an error signal indicative of a difference between said reference signal and said speed signal, isolation means receiving said error signal and producing an isolation error signal in response thereto, timing means receiving said isolation means error signal and producing a signal having a selected amplitude after a period of time proportional to a magnitude of said error signal, and a triac connected to said timing means to receive said selected amplitude signal therefrom and to change state in response thereto to control a flow of electric current received from an external power source through said electric motor of said household electric appliance.

4,605,884

CONTROL UNIT

Ken Miyagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

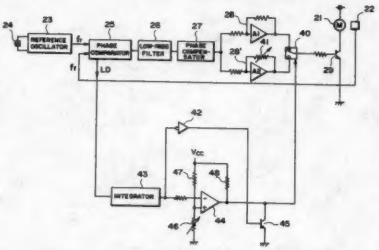
Continuation of Ser. No. 488,176, Apr. 25, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,421
Claims priority, application Japan, Apr. 30, 1982, 57-71383
Int. Cl.[4] H02P 5/00
U.S. Cl. 318—314 **18 Claims**

12. A control unit for a movable member comprising:

detection means for detecting movement of said movable member and for producing a detection output;

control means having first, second and third control modes for controlling said movable member in response to the detection output of said detection means to regulate an operation of the movable member; and

changing means for providing only the first control mode during the start of said movable member, changing from the first control mode to the second control mode of said



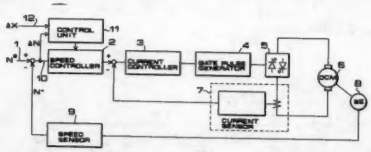
control means when the operation of said movable member reaches a first stage after the start of said movable member and changing from the second control mode to the third control mode when said movable member reaches a second stage after the start of said movable member.

4,605,885

METHOD OF CONTROLLING ROTATION SPEED OF MOTOR

Masamichi Mitsuhashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1985, Ser. No. 751,548
Claims priority, application Japan, Aug. 7, 1984, 59-166724
Int. Cl.[4] H02P 5/00
U.S. Cl. 318—317 **2 Claims**



1. A method of controlling the rotation speed of a motor comprising the steps of:

detecting a deviation between the rotation speed detected by a speed sensor and a desired rotation speed;

detecting a difference between a detected current flowing in said motor and a current reference signal obtained through a computation executed in a speed controller on the basis of said deviation, and subsequently;

controlling the motor current in accordance with a signal obtained through a computation executed in a current controller on the basis of said difference, thereby maintaining the rotation speed of said motor at a desired value;

comparing a maximum ripple value with said deviation;

setting the gain of said speed controller at a predetermined first value, in response to the comparing step indicating said deviation is greater than said maximum ripple value, to provide for fast response in controlling the motor rotation speed; and

setting the gain of said speed controller at a second value which is lower than said predetermined first value, in response to the comparing step indicating that said deviation is smaller than said maximum ripple value, to stabilize

speed control by avoiding fast adjustments in speed due to ripple.

4,605,886

FEED-DEVIATION PREVENTIVE PATH-CONTROLLED MACHINING METHOD AND APPARATUS

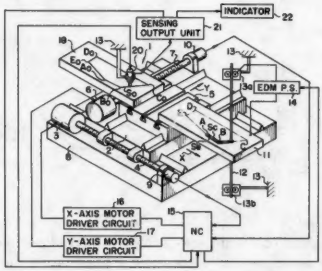
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Aug. 31, 1984, Ser. No. 646,623

Claims priority, application Japan, Sep. 2, 1983, 58-160419; Sep. 16, 1983, 58-169395

Int. Cl.[4] G05B *23/02*

U.S. Cl. 318—565 **4 Claims**



1. A method of machining a workpiece to generate a desired contour therein by means of a numerically path-controlled machine tool having first support means for supporting the workpiece, tool support means supported by second support means for positioning a tool member in machining relationship with the workpiece in a machining operation and drive means drivingly coupled with at least one of the first and second support means and operable in response to a predetermined sequential set of numerical commands for relatively displacing the first and second support means to correspondingly relatively displace the tool member and the workpiece along a prescribed machining feed path such as to generate the desired contour therein in the machining operation, the method comprising the steps of:

disposing and maintaining a record medium in a fixed positional relationship with one of said first and second support means;

in a preliminary operation in advance of said machining operation, disposing and maintaining plotting means in a fixed positional relationship with the other of said first and second supporting means while maintaining the plotting means in plotting engagement with said record medium, and furnishing said drive means with said predetermined sequential set of numerical commands whereby the consequential relative displacement between said first and second support means results in corresponding relative displacement between said plotting means and said record medium to produce a continuous plot equivalent to said prescribed machining feed path on said record medium and in the form of a visible trace; and

in said machining operation, disposing and maintaining sensing means in a fixed positional relationship with said other support means and in sensing engagement with said plotted record medium on said one support means so that said sensing means and said record medium are relatively displaced as said first and second support means are relatively displaced by said drive means furnished with said predetermined sequential set of numerical commands to continuously trace said continuous plot and optically produce an OK signal as long as the commanded relative displacement between the tool member and the workpiece proceeds along said prescribed machining feed path, and detecting a deviation of said commanded relative displacement from said prescribed machining feed path at any point thereon by sensing a disappearance of said OK signal.

4,605,887

ARRANGEMENT FOR CONTROLLING THE SPEED AND POSITIONING OF AN ELECTRIC MOTOR

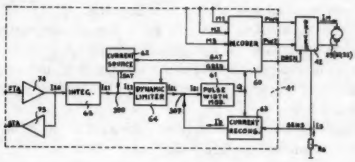
Marcello Boella, Loranzé Alto, and Ferruccio Mariotti, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Sep. 1, 1983, Ser. No. 528,655

Claims priority, application Italy, Sep. 1, 1982, 68062 A/82

Int. Cl.[4] G05B *11/18*

U.S. Cl. 318—594 **15 Claims**



1. An arrangement for controlling the speed and the position of a direct-current electric motor connected to a rotatable part of an office machine, comprising:

encoder means associated with said motor for generating feedback signals indicative of the angular position of said motor and of the actual time (T_p) elapsed for covering a predetermined angular step (pa);

an electric control circuit connected to said motor for selectively shortcircuiting, accelerating and braking said motor; and

a microprocessor connected to said electric control circuit and to said encoder means, said microprocessor comprising memory means for storing the theoretical times (T_R) necessary for covering each angular step (pa) as a function of the full amplitude of the rotation of said motor from an actual position to a desired position, and comparator means for comparing for each angular step (pa) said actual time (T_p) with the corresponding theoretical time (T_R) and consequently generating logical signals which cause said electric control circuit to short-circuit, to accelerate or to brake said electric motor.

4,605,888

STARTING WINDING SWITCHING CIRCUIT FOR SINGLE-PHASE INDUCTION MOTORS

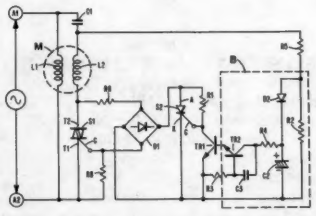
In S. Kim, 134-21, Cheongdam-dong, Apart 10-dong 615, Kangnam-ku, Samig, Rep. of Korea

Filed Feb. 17, 1984, Ser. No. 657,361

Claims priority, application Rep. of Korea, Feb. 21, 1983, 1983 692

Int. Cl.[4] H02P *1/64*

U.S. Cl. 318—786 **2 Claims**



1. A switching device for use with a single phase induction motor having a main winding, and a starting winding in series

with a starting capacitor, connected in parallel across first and second supply terminals, said switching device comprising:

a triac having first, second and gate terminals, said triac's first terminal connected to one terminal of the the starting winding, and said triac's second terminal connected to the second supply terminal;

a diode bridge having first and second a.c. terminals and first and second d.c. terminals, said first d.c. terminal outputting a reference potential and said second d.c. terminal outputting a positive rectified potential, said second a.c. terminal connected to said triac's gate terminal;

a first resistor connected between said triac's first terminal and said diode bridge's first a.c. terminal;

a second resistor connected between said triac's second terminal and said triac's gate terminal;

a silicon control rectifier (SCR) having anode, cathode and gate terminals, said SCR's anode terminal connected to said diode bridge's second d.c. terminal, and said SCR's cathode terminal connected to said diode bridge's first d.c. terminal;

a third resistor connected between said diode bridge's first a.c. terminal and said SCR's anode terminal;

a fourth resistor connected between said SCR's anode terminal and said SCR's gate terminal;

a PNP transistor having emitter, collector and base terminals, said PNP transistor's emitter terminal connected to said SCR's gate terminal, and said PNP transistors collector terminal connected to said SCR's cathode terminal;

an NPN transistor having emitter, collector and base terminals, said NPN transistor's collector terminal connected to said PNP transistor's base terminal;

a first capacitor connected between said NPN transistor's collector terminal and said NPN transistor's base terminal;

a fifth resistor connected between said NPN transistor's base terminal and said NPN transistor's emitter terminal;

a diode having anode and cathode terminals;

a sixth resistor connected between said NPN transistor's emitter terminal and said diode's anode terminal;

a second capacitor connected between said PNP transistor's emitter terminal and said diode's anode terminal;

a seventh resistor connected between said PNP transistor's emitter terminal and said diode's cathode terminal; and

an eighth resistor connected between said diode's cathode terminal and the other terminal of the starting winding.

4,605,889

BRUSHLESS TACHOMETER/SYNCHRO

John R. Luneau, Moultonborough, N.H., assignor to Resolvex Corporation, Center Harbor, N.H.

Filed Aug. 21, 1984, Ser. No. 642,992

Int. Cl.[4] H02P *9/14*; G01P *3/46*

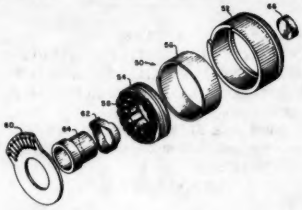
U.S. Cl. 322—61 **9 Claims**

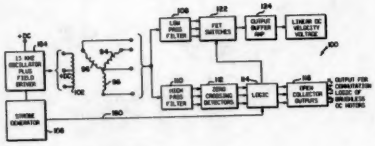
1. A generator, comprising:

means for providing a magnetic fie' including a constant field and an alternating field having a frequency of alternation;

means for detecting said magnetic field producing a corresponding detected field signal;

an armature for selectively coupling said field according to a physical motion of said armature through a range; and





output means receiving said detected field signal and producing a tachometer output and a position output therefrom.

4,605,890

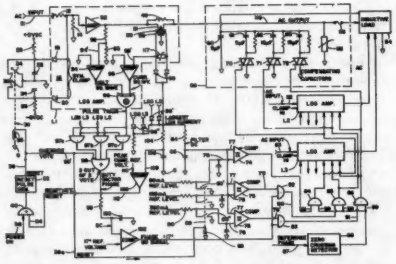
SYNCHRO POWER AMPLIFIER AND CONTROL CIRCUIT FOR AUTOMATICALLY TUNING AN INDUCTIVE LOAD

Dennis F. Ogle, ChulaVista; Charles A. Clark, Jr., Chatsworth, and Ramon H. Aires, Granada Hills, all of Calif., assignors to Vernitron Corporation, Lake Success, N.Y.

Filed Jun. 24, 1985, Ser. No. 747,850

Int. Cl.[4] G05F *1/70*

U.S. Cl. 323—209 **9 Claims**



1. A power amplifier control circuit for an inductive load driven by a plurality of synchro AC inputs, comprising:

a plurality of leg amplifiers respectively connected between said AC inputs and said load, each of said amplifiers having circuit means for deriving current samples drawn only by said load from said amplifiers;

a multiplicity of capacitors respectively connectable in parallel with said load upstream of said amplifiers; and

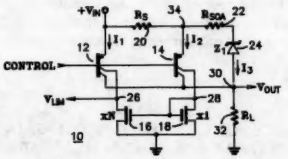
a plurality of switches connected respectively in circuit with said capacitors for selecting one of said capacitors and for connecting said selected capacitor in parallel with said load to compensate for inductance of said load.

4,605,891

SAFE OPERATING AREA CIRCUIT AND METHOD FOR AN OUTPUT SWITCHING DEVICE

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Jun. 21, 1984, Ser. No. 622,894
Int. Cl.[4] G05F *1/46*; H03K *5/08*
U.S. Cl. 323—313 16 Claims



1. A safe operating area circuit in combination with a current sensing circuit coupled to an input voltage line and having a control line input, said combination for providing a current limited output on an output voltage line in response thereto, comprising:

an output switching device having first, second and third terminals thereof, said first terminal being coupled to said input voltage line, said second terminal being connected to said control input line and said third terminal being connected to said output voltage line; and

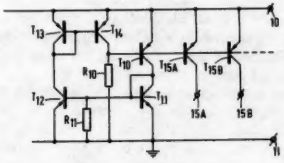
means coupling said input and output voltage lines for selectably controlling a level of said current on said output voltage line.

4,605,892

CURRENT-SOURCE ARRANGEMENT

Evert Seevinck, Delden, and Adrianus J. M. Van Tuijl, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,763
Claims priority, application Netherlands, Feb. 29, 1984, 8400636
Int. Cl.[4] G05F *3/20*
U.S. Cl. 323—315 7 Claims



1. A current-source circuit operable between two power supply terminals, said power supply terminals being adapted to be connected to a supply voltage, comprising in combination

a first resistor of a predetermined resistance value,

a first transistor having a collector, and a base-emitter junction connected in series with said first resistor, and wherein a base-emitter voltage appears across said base-emitter junction, the series combination of said first resistor and said base-emitter junction being connected across said power supply terminals,

first current mirror circuit means having an input thereof coupled to the collector of said first transistor, and having a first current multiplication factor,

said first current mirror circuit means having

a second transistor, said second transistor having a base emitter junction and a collector, a low-impedance connection existing between the base and the collector of said second transistor, and

a third transistor having a collector and a base-emitter junction, said base emitter junction being connected in parallel with the base-emitter junction of said second transistor,

a second resistor being connected in parallel with the base-emitter junction of said second transistor,

said second and third transistors, and said second resistor being connected to one of said terminals, said first transistor defining a saturation voltage, and

second current mirror circuit means connected to the other of said power supply terminals, having an input thereof coupled to the collector of said third transistor, having an output thereof coupled to the base of said first transistor, and having a second current multiplication factor,

said second resistor having a resistance value substantially equal to the quotient of said first resistor value, and the product of (a) the base-emitter voltage of said first transistor, (b) said first current multiplication factor and (c) said second current multiplication factor,

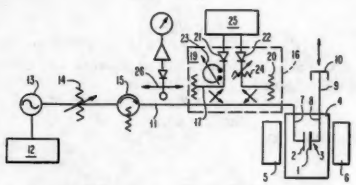
whereby said current-source circuit may supply a current substantially proportional to supply voltages which exceed a voltage substantially equal to the base emitter voltage plus the saturation voltage.

4,605,893

CONTACTLESS MEASUREMENT OF ELECTRICAL PROPERTIES OF WAFER SHAPED MATERIALS

Norman Braslau, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1984, Ser. No. 647,785
Int. Cl.[4] G01R *27/04*
U.S. Cl. 324—58.5 B 13 Claims



1. Electrical measurement apparatus comprising in combination

a waveguide having a source of microwave power applied at one portion thereof, and a short circuit termination at a second separated portion thereof,

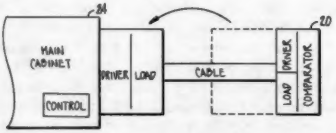
means for insertion of a material with substrate to be measured across the entire cross section of said waveguide, said means being positioned at a location in said waveguide sufficiently adjacent to said short circuit termination to compensate for the reactance of said substrate and between said short circuit and said source of microwave power, said insertion means having means for compensating for a change in waveguide impedance produced by said insertion means, and

microwave relfection comparison means located on said waveguide at a position intermediate the location of said insertion means and said source of microwave power.

4,605,894
HIGH DENSITY TEST HEAD

Gerald Cox, Fremont, and Bill DeHaven, Los Altos, both of Calif., assignors to GenRad Semiconductor Test, Inc., Milpitas, Calif.

Filed Aug. 29, 1983, Ser. No. 527,214
Int. Cl.[4] G01R *31/26, 1/02, 17/02*
U.S. Cl. 324—73 R **12 Claims**



1. A method of configuring a system for automatically testing electronic assemblies wherein control means provide signals to control driver, load, and comparison circuitry, which circuitry supply test signals to and receive response signals from an electronic assembly under test and evaluate the received response signals, and further wherein the driver and load circuitry consume a first total amount of power, the method comprising the steps of

a. positioning the control means in a main cabinet;

b. partitioning the driver and load circuitry into a first portion which dissipates substantially all of the first total amount of power and a second portion which includes the remainder of the driver and load circuitry;

c. positioning substantially all of the first portion of the driver and load circuitry in the main cabinet;

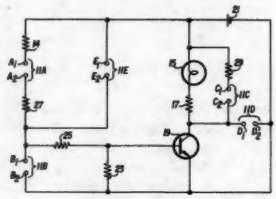
d. positioning the remainder of the first portion and all of the second portion of the driver and load circuitry in a test head, wherein the test head supports the electronic assembly under test, couples the test signals to the electronic assembly under test, and receives the response signals from the electronic assembly under test; and

e. coupling the second portion of the load and driver circuitry in the test head to the first portion of the load and driver circuitry in the main cabinet, whereby the amount of power dissipated in the test head is minimized.

4,605,895
DOMESTIC ELECTRICAL TESTER

Alan J. C. Park, Waterside Cottage, Bowden La., Chapel en le Frith, Stockport SK12.6QF, England

Filed Mar. 9, 1984, Ser. No. 587,968
Int. Cl.[4] G01R *19/14*
U.S. Cl. 324—133 **11 Claims**



1. An electrical testing device, comprising:

at least a first, second and third measuring terminal pairs;

circuit means connected to said measuring terminal pairs for measuring a respective electrical parameter by means of each of said terminal pairs, said circuit means operating differently depending on which of said measuring terminal pairs are used for a measurement;

indicating means connected to said circuit means for indicating the result of a measurement using one of said measuring terminal pairs;

said circuit means being responsive to:

(a) said first pair of measuring terminals to energize said indicating means when an applied voltage thereat is in a first predetermined voltage range;

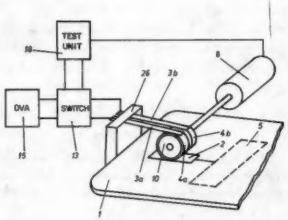
(b) said second pair of measuring terminals to energize said indicating means when an applied DC voltage thereat is in a second predetermined voltage range; and,

(c) said third pair of measuring terminals to energize said indicating means when a resistance applied across said third pair of measuring terminals is below a first predetermined value.

4,605,896
METHOD OF CONTACTING THE GALVANIC CONTACTS OF AN IDENTIFICATION CARD WITH AN EMBEDDED IC-MODULE

Werner Obrecht, Wielenbach, Fed. Rep. of Germany, assignor to GAO Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Continuation of Ser. No. 261,548, May 7, 1981, abandoned. This application Mar. 13, 1985, Ser. No. 710,944
Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019206
Int. Cl.[4] G01R *1/06, 31/02;* **G07F** *1/06;* **G06K** *7/01*
U.S. Cl. 324—158 F **9 Claims**



1. A method for establishing an electrical connection suitable for communicating a data signal between contact elements in a receiving station and contact areas provided on the surface of a member placed in the receiving station in proximity with the contact elements, said method comprising the steps of:

applying the contact elements to the contact areas for purposes of establishing an electrical connection suitable for communicating the data signal between the contact elements and contact areas;

thereafter retaining the contact elements at the points of initial application to the contact areas irrespective of whether the electrical connection exists or not;

initiating a test employing electrical phenomena associated with a signal other than the data signal for determining whether an electrical connection suitable for communicating the data signal exists between the contact elements and contact areas at the points of application of the contact elements;

determining by means of said other signal phenomena whether a suitable electrical connection for communicating the data signal exists at said points;

initiating a cleaning of the contact areas at said points if a suitable electrical connection does not exist, while simultaneously carrying out further testing for the existence of a suitable electrical connection;

terminating the cleaning of the contact areas when the existence of a suitable electrical connection between the contact elements and the contact areas is detected by means of said electrical phenomena associated with said other signal; and

commencing communication of the data signal between the contact elements and contact areas at the points of initial

application of the contact elements to the contact areas when a suitable electrical connection exists.

4,605,897

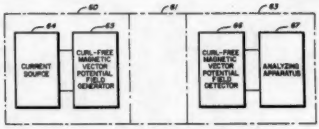
APPARATUS AND METHOD FOR DISTANCE DETERMINATION BETWEEN A RECEIVING DEVICE AND A TRANSMITTING DEVICE UTILIZING A CURL-FREE MAGNETIC VECTOR POTENTIAL FIELD

Raymond C. Gelinas, Concord, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 198,326, Oct. 20, 1980, abandoned. This application Feb. 13, 1984, Ser. No. 579,846

Int. Cl.[4] G01B *7/14;* **G01R** *35/00, 33/00*

U.S. Cl. 324—207 **9 Claims**



1. A method for determining distance between a radiation transmitting apparatus and a radiation detection apparatus comprising the steps of:

a. generating a curl-free magnetic vector potential field having preselected characteristics by said transmitting apparatus;

b. calibrating output signals generated by said detection apparatus in response to detection of a magnetic vector potential field having predetermined characteristics as a function of distance between radiation transmitting apparatus and said radiation detecting apparatus; and

c. measuring an output signal of said detecting apparatus when said transmitting apparatus is generating a curl-free magnetic vector potential field with said preselected characteristics at an unknown distance from said receiving apparatus, said unknown distance being determined by comparison of said output signal resulting from a curl-free magnetic vector potential field having said predetermined characteristics and said output signal resulting from a curl-free magnetic vector potential field having said preselected characteristics, wherein said predetermined characteristics and said preselected characteristics have a known relationship.

4,605,898

PULSE FIELD METAL DETECTOR WITH SPACED, DUAL COIL TRANSMITTER AND RECEIVER SYSTEMS

Kari T. J. Aittoniemi; Erkki S. Kiuru, both of Espoo; Aatu V. K. Lappalainen, Helsinki, and Kalevi Savolainen, Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

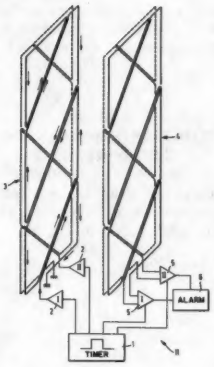
Continuation of Ser. No. 439,394, Nov. 4, 1982, abandoned. This application Jun. 27, 1985, Ser. No. 750,054

Claims priority, application Finland, Nov. 6, 1981, 813502

Int. Cl.[4] G01R *33/12;* **G08B** *13/24*

U.S. Cl. 324—232 **5 Claims**

1. An apparatus for detecting metal objects, the said apparatus comprising a transmitter coil system and a receiver coil system spaced and separated from said transmitter coil system to allow the passage of objects to be detected between the two systems, the transmitter coil system consisting of at least two coils for creating divergent primary fields which change their direction and size according to their location, which primary fields in turn create eddy currents in an object moving within the said primary fields, whereafter the secondary field created in the object induces a signal in the receiver coil system, as well as means for amplifying and processing the signal, wherein the transmitter coil system is formed of at least two planar coils, each planar coil comprising a plurality of planar loops extending in a given direction and encompassing a predetermined area, said planar coils being juxtaposed, one on top of the other, so as to lie substantially within the same plane in said predetermined area, with the loops of one of said coils being in mirror image relationship with respect to the loops of the other of said coils so that the magnetic fields created by the coils are divergent and that the receiver coil system is also comprised of the same number of coils as the transmitter coil system which



coils are placed with respect to each other in a similar relationship to that of the coils of the transmitter coil system, means for alternately energizing said at least two transmitter coils, and means synchronized with said energizing means for alternately sampling signals induced in said receiver coils and feeding said sampled signals to said means for amplifying and processing the signal.

4,605,899

MAGNETIC FIELD SENSOR USING A COAXIAL LINE WOUND INTO A COIL

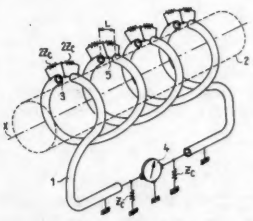
Grégoire Eumurian, Argenteuil, and Jean-Pol Levan, Clamart, both of France, assignors to Thomson CSF, Paris, France

Filed Oct. 11, 1983, Ser. No. 541,004

Claims priority, application France, Oct. 15, 1982, 82 17296

Int. Cl.[4] G01R *33/02;* **H01F** *5/02, 15/04*

U.S. Cl. 324—258 **7 Claims**



1. A magnetic field sensor comprising:

a coaxial, constant characteristic impedance line having an internal conductor and an external conductor, said characteristic impedance being resistive, said line being terminated at two ends and being formed into a plurality of turns constituting a coil with each turn having a portion wherein the external conductor is removed generating an impedance break, said removed portions being regularly positioned along said line at intervals corresponding to the length of a turn, said coil forming a regular helix around a straight cylinder and said portions being aligned parallel to the axis of said cylinder;

auxiliary current measuring means connected between said ends of said impedance line for measuring the current induced in said impedance line,

first resistive matching means, connected to the said line ends respectively between said internal and external conductors for preserving said constant characteristic impedance value at said line ends connected to said measuring means, and

second resistive matching means connected between said internal and external conductors at each of said portions for compensating said impedance break and preserving said constant characteristic impedance value in said portions.

4,605,900

ELECTRODE SYSTEM FOR VOLTAMETRIC MEASUREMENTS

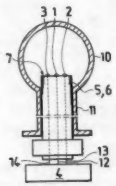
Juhani Moilanen, and Markku Pietikäinen, both of Kajaani, Finland, assignors to Kajaani OY, Finland

Filed May 11, 1983, Ser. No. 493,459

Claims priority, application Finland, May 12, 1982, 821670

Int. Cl.[4] G01N *27/00*

U.S. Cl. 324—439 **10 Claims**



1. An electrode system for voltametric measurements of oxidative and reductive compounds in aqueous solutions, comprising:

a working electrode,

a counter-electrode,

a reference electrode, and

a single pick-up, each of said three electrodes being mounted in said pick-up,

each of said electrodes being connected to a voltametric measuring apparatus,

said reference electrode being a metal electrode,

wherein a constant voltage is maintained between said reference and working electrodes by said voltametric measuring apparatus,

wherein said pick-up further comprises a frame part in contact with the aqueous solution being measured, said frame part made of insulating material, said electrodes at least partly projecting through the surface of the frame part so as to be in contact with the solution being measured.

4,605,901

FREQUENCY-VOLTAGE CONVERTER

Yasunori Kobori; Isao Fukushima; Hideo Nishijima; Yoshinori Masuda, all of Katsuta, and Norihisa Yamamoto, Gunma, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer & Engineering, Ltd., both of Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,827

Claims priority, application Japan, Apr. 21, 1982, 57-65280

Int. Cl.[4] H03K *9/06*

U.S. Cl. 328—140 **6 Claims**

1. A frequency-voltage converter for a motor speed control system comprising:

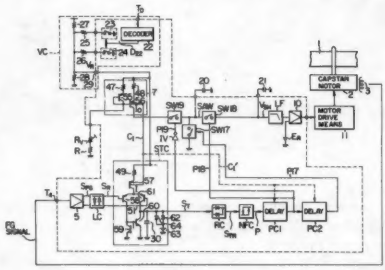
frequency signal generating means for generating a frequency signal corresponding to the speed of a motor driven by a motor driving means;

pulse generating means connected to receive the output of said frequency signal generating means for generating pulse signals in response to said frequency signal;

means connected to receive the output of said pulse generating means for generating a saw-tooth wave signal in response to said pulse signals and having a slope dependent upon an applied electric current;

sample-and-hold means connected to said saw-tooth wave signal generating means for sampling and holding a voltage of said saw-tooth wave signal;

means connected to said sample-and-hold means for comparing said sampled and held voltage of said saw-tooth wave signal with a reference voltage and for amplifying a difference between said sampled and held voltage and said reference voltage to output said amplified difference to said motor driving means;



a current source for supplying to said saw-tooth wave signal generating means an electric current which is dependent on the value of an applied supply voltage, said current source including a fixed resistor and a variable resistor to adjust the output current of said current source; and

supply voltage changing means connected to said current source for supplying a voltage to said fixed and variable resistor and for changing the value of said supply voltage in accordance with an applied signbal indicating a desired speed of said motor.

4,605,902

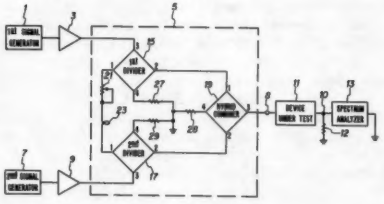
HYBRID JUNCTION SIGNAL COMBINER

Timothy A. Harrington, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 3, 1982, Ser. No. 414,751

Int. Cl.[4] H01P *5/12, 5/22;* **G06G** *7/12*

U.S. Cl. 328—158 **6 Claims**



1. A signal combiner for providing isolation between two signal sources that provide a first signal and a second signal, the combiner comprises:

a first divider means for dividing the first signal into a third and fourth signal;

a second divider means for dividing the second signal into a fifth and sixth signal;

cancellation means for cancelling the third and fifth signals and any leakage from the fourth and sixth signals; and

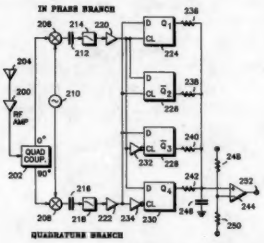
a first combiner means for combining the fourth signal with the sixth signal to obtain a seventh signal that is the combination of the first and second signal.

4,605,903

FSK DEMODULATOR WITH HIGH NOISE IMMUNITY DIGITAL PHASE DETECTOR

John M. Ihle, Lake Worth, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 7, 1985, Ser. No. 795,941
Int. Cl.[4] H03D *3/18*
U.S. Cl. 329—50 **7 Claims**



1. A detector, for use with means for receiving, splitting, phase shifting, and mixing with a local oscillator signal a received modulated signal to produce binary in-phase and binary quadrature phase signals respectively at in-phase and quadrature phase output, said detector comprising in combination:

first flip flop means, connected to said quadrature phase output, for clocking said quadrature phase signal on the leasing edge of said in-phase signal;

second flip flop means, connected to said in-phase output, for clocking said in-phase signal on the leading edge of said quadrature phase signal;

third flip flop means, connected to said quadrature phase output, for clocking said quadrature phase signal on the trailing edge of said in-phase signal;

fourth flip flop means, connected to said in-phase output, for clocking said in-phase signal on the trailing edge of said quadrature phase signal; and

averaging means, connected to said first, second, third, and fourth flip flop means, for averaging the output signals of said first, second, third, and fourth flip flop means.

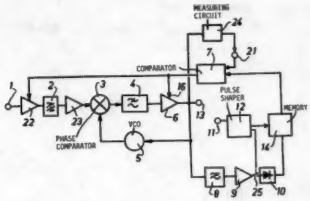
4,605,904

PHASE LOCKED LOOP FREQUENCY DEMODULATOR HAVING AN ADJUSTABLE BANDWIDTH

Mohammed Hajj-Chehade, Asnieres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1985, Ser. No. 731,815
Claims priority, application France, May 15, 1984, 84 07500
Int. Cl.[4] H03D *3/00*
U.S. Cl. 329—50 **6 Claims**

1. A frequency demodulator whose bandwidth can be adjusted during operation, used in a TV picture receiver receiving inter alia synchronizing signals, this demodulator being of the phase control loop type formed in essence by a phase comparator, a filter and a voltage-controlled oscillator, characterized in that it comprises a sampling circuit for taking a sample of the demodulated signal from the output of the demodulator at the start of a synchronizing signal, the sampling circuit comprising a rectifier for rectifying said sample signal, a comparator for comparing the rectified sample signal with a predetermined d.c. voltage, and in that the output of this comparator which produces a correction signal is coupled to a



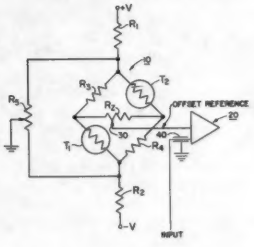
variable gain input of a variable-gain amplifier included in the control loop.

4,605,905

AMPLIFIER INPUT CIRCUITRY WITH COMPENSATION FOR PYROELECTRIC EFFECTS

Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Hauppauge, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,324
Int. Cl.[4] H03F *1/02*
U.S. Cl. 330—9 **2 Claims**

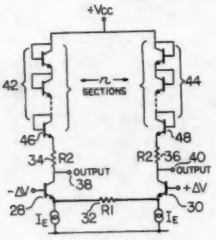


1. A high gain high impedance direct-current amplifier circuit including input circuitry with feedthrough capacitors subject to temperature related pyroelectric effects, comprising a bridge circuit having temperature responsive impedances in one set of opposing legs and fixed impedances in the second set of opposing legs, a potentiometric device connected across one diagonal of said bridge having control means for producing a zero reference voltage between those appearing across said one diagonal, a direct-current reference voltage connected across the other diagonal of said bridge, wherein means for establishing the magnitude of said direct-current reference voltage includes: first and second direct voltage sources of opposite polarity, impedances connecting said sources to opposite ends of said other diagonal of said bridge, variable impedance means connected across said other diagonal of said bridge and adjustable to set the voltage at either end thereof to a direct voltage level between said first and second sources, said control means yielding an offset voltage for application to said amplifier that compensates for said pyroelectric effects as the ambient temperature changes.

4,605,906
DIFFERENTIAL PAIR AMPLIFIER ENHANCEMENT CIRCUIT

Allen Miller, London, England, assignor to Gould Instruments, Ltd., Essex, England

Filed Jan. 28, 1985, Ser. No. 695,668
Int. Cl.[4] H03F *3/45, 1/32*
U.S. Cl. 330—149 **11 Claims**



1. An enhanced differential pair amplifier circuit comprising:

first and second common lines, said first common line being at a different potential than said second common line;

first and second input transistors, each input transistor having a base, emitter, and collector, at least one of said bases being provided to receive a voltage input signal;

first and second current sources, said first current source connected between the emitter of said first input transistor and first common line, said second current source being connected between the emitter of said second transistor and first common line;

a gain-defining emitter degeneration transistor resistor connected between the emitters of said first and second transistors;

first and second diode means for linearity compensation, each diode means having first and second ends, said first end of said first diode means being connected to the collector of said first input transistor and said first end of said second diode means being connected to the collector of said second input transistor, said second ends of said first and second diode means being connected to said second common line such that said diode means are forward biased;

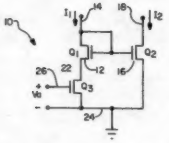
wherein each of said diode means comprises n diodes, where n is the integral gain of the amplifier; and

output signal means for taking an output signal from the collectors of said first and second input transistors.

4,605,907
PRECISELY ADJUSTABLE VOLTAGE CONTROLLED CURRENT MIRROR AMPLIFIER

Bruce D. Rosenthal, Sunnyvale, and Richard L. Gray, Palo Alto, both of Calif., assignors to Teledyne Industries, Inc., Mountain View, Calif.

Filed May 20, 1985, Ser. No. 735,652
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—257 **26 Claims**



1. An adjustable current mirror circuit operating from a reference voltage level and responsive to a balance control signal comprising:

(a) first means for providing a first current path, said first means including current reference means for providing a current level control signal corresponding to the current level of said first current path with respect to a bias voltage level offset from said reference voltage level;

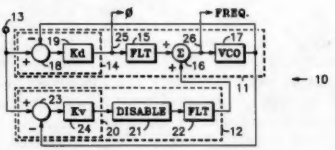
(b) second means for providing a second current path, said second means including current control means for controlling the current level of current through said second current path, said current control means being responsive to said current level control signal with respect to said reference voltage level; and

(c) third means, provided in series with said current reference means in said first current path, for adjusting said current level control signal by providing said bias voltage level variably in response to said balance control signal.

4,605,908
DISABLE CIRCUIT FOR A PHASE LOCKED LOOP DISCRIMINATOR CIRCUIT

Christopher D. Broughton, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1985, Ser. No. 812,555
Int. Cl.[4] H03L *7/06*
U.S. Cl. 331—8 **22 Claims**



1. A disable circuit for use in a phase locked loop discriminator circuit, said phase locked loop discriminator circuit comprising (a) phase locked loop means for providing fine tuning in said phase locked loop discriminating circuit, said phase locked loop means having (i) a signal input coupled to a signal input of said phase locked loop discriminator circuit, (ii) an output, (iii) a fine adjusting input being coupled to said output of said phase locked loop means, and (iv) a course adjusting input, and (b) discriminator means for providing course tuning of said phase locked loop discriminating circuit said discriminator means having, (i) a signal input coupled to said signal input of said phase locked loop discriminator circuit, (ii) an adjusting input coupled to said output of said phase locked loop means, and (iii) an output, said disable circuit comprising:

a first resistor having a first node coupled to said output of said discriminator means, and a second node;

an operational amplifier having an input of a first polarity coupled to said second node of said first resistor, an input of a second polarity coupled to a ground, and an output coupled to said course adjusting input of said phase locked loop means;

a first diode having an cathode coupled to said output of said operational amplifier, and a anode;

a second diode having a anode coupled to said anode of said first diode and having an cathode coupled to said input of said first polarity of said operational amplifier;

a third diode having a anode coupled to said output of said operational amplifier and an cathode;

a fourth diode having a anode coupled to said cathode of said second diode, and an cathode coupled to said cathode of said third diode;

a first current generator having an output coupled to said anodes of said first and second diodes; and

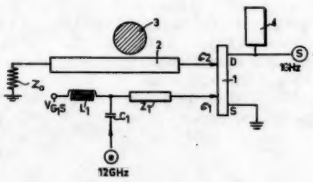
a second current generator having an input coupled to said cathodes of said third and fourth diodes.

4,605,909

DUAL GATE FET OSCILLATOR MIXER

Christos Tsironis, Montgeron, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,147
Claims priority, application France, Jan. 28, 1981, 81 01618
Int. Cl.[4] H03B 5/18
U.S. Cl. 331—96 6 Claims



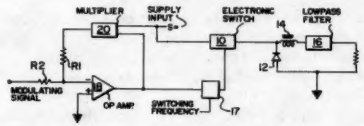
1. A self-oscillating circuit arrangement comprising:
(a) a dual-gate field effect transistor including first and second gate electrodes, a drain electrode and a source electrode;
(b) a first input circuit comprising an input terminal, an input impedance electrically connected between said input terminal and the first gate electrode, and means for applying a bias voltage to said first gate electrode;
(c) a second input circuit comprising a strip-type transmission line having one end electrically connected to the second gate electrode, said transmission line being terminated in a load having an impedance equal to the characteristic impedance of the line and being electromagnetically coupled to a dielectric resonator having a predetermined resonant frequency;
(d) an output terminal coupled to the drain electrode; and
(e) means electrically connected to the source electrode for referencing said electrode to a predetermined voltage;
said circuit arrangement producing at the output terminal an output signal having a difference frequency equal to the difference between the frequency of an input signal applied to the input terminal and the resonant frequency.

4,605,910

AM PULSE DURATION MODULATOR

Dennis H. Covill, Tantallon, Canada, assignor to Nautical Electronic Laboratories Limited, Hacketts Cove and Tantallon Halifax Co., Nova Scotia, both of, Canada

Filed Jun. 28, 1984, Ser. No. 625,694
Int. Cl.[4] H03K 7/00
U.S. Cl. 332—9 R 12 Claims



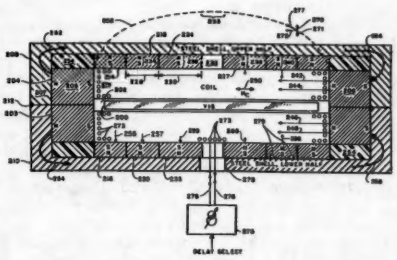
1. A circuit for producing a switching modulating signal from a modulating signal for controlling a pulse duration modulator of the type which switches a supply voltage to produce a modulated signal, said circuit including means to produce the reciprocal of the supply voltage and means to combine the reciprocal of the supply voltage with said modulating signal to produce said switching modulating signal whereby the modulated signal is substantially independent of fluctuations in the supply voltage.

4,605,911

MAGNETIC BIAS AND DELAY LINEARITY IN A MAGNETOSTATIC WAVE DELAY LINE

Korda K. Jin, Brea, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 24, 1984, Ser. No. 664,193
Int. Cl.[4] H03H 9/38
U.S. Cl. 333—144 21 Claims



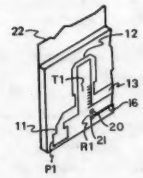
1. Controllable laminar magnetic flux generating apparatus comprising:
first and second sources of magnetomotive force located at two displaced points along an axis and polarized to establish magnetic field flux lines starting at said first source, tending to extend along said axis in an outward curving line pattern, having flux line components both parallel and perpendicular to said axis and ending at said second source;
a third distributed element controllable source of magnetomotive force located in lengthwise dispersion along said axis between said first and second sources for subtractively and additionally modulating the strength of said first and second source magnetic field flux lines in response to a control signal;
means located along said axis for diverting said magnetic field flux lines from said curving line pattern to a pattern of flux lines extending parallel to said axis between said first and second sources; and
a cavity receptacle concentric with said axis and communicating therealong between said first and second sources.

4,605,912

CONTINUOUSLY VARIABLE PHASE SHIFTING ELEMENT COMPRISED OF INTERDIGITATED ELECTRODE MESFET

Ronald J. Naster; John A. Windyka, both of Liverpool, and Allen R. Wolfe, Sauquoit, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 327,133, Dec. 3, 1981, abandoned. This application Apr. 26, 1984, Ser. No. 604,192
Int. Cl.[4] H03H 11/20
U.S. Cl. 333—164 24 Claims



1. A variable phase shifting element for electrical signals

operable over a selected band of frequencies and suited to integrated fabrication, comprising:

A. a first transmission line for interconnection to electrical signals;

B. a variable resistance Field Effect Transistor (FET) having two principal electrodes and a gate electrode for control of conduction between said principal electrodes, the net impedance of said FET being primarily capacitively reactive when said gate is biased off and primarily resistive when said gate is biased on over said band, a first principal electrode of said FET being connected to said first transmission line;

C. a second transmission line exhibiting an inductive reactance over said band, said second transmission line being connected between said principal electrodes to form with said FET a parallel combination;

D. a third transmission line of interconnection, connected to the second principal electrode of said FET, the electrical signals transmitted through said phase shifting element, when said FET is maximally conductive, passing substantially undivided through said FET to effect a first phase shift; and when said FET is turned off, said signals dividing at said parallel combination to effect a second phase shift differing from said first phase shift; and

E. means for applying a control potential to said gate to cause said FET to assume a selected conductivity limited by said off state and said maximally conductive, on state, to effect a desired phase shift.

4,605,913
TRANSVERSAL FILTER HAVING AN ANALOG SHIFT REGISTER

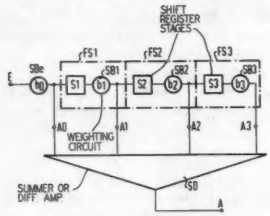
Hans-Joerg Pfleiderer, Zorneding, and Karl Knauer, Kirchseon, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 508,873

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235678

Int. Cl.⁴ H03H *15/02*

U.S. Cl. 333—166 **2 Claims**



1. A transversal filter comprising:

a filter input for receiving an input signal;

a shift register including a plurality of serially-connected stages including an input stage connected to said filter input and a plurality of parallel outputs each from a separate stage;

signal combining means connected to said plurality of parallel outputs for combining signals appearing at said outputs into an output signal representing a filtered input signal; and

a plurality n of weighting devices each associated with and connected to a respective shift register stage of a group n of said stages and serially interconnecting with the next succeeding stage and providing at each serial interconnection taps constituting said plurality of parallel outputs, said weighting devices including an input weighting device providing a weighting coefficient b_0 connected to the input stage and the remainder of weighting devices connected to the first through the n^{th} stages of said group respectively providing weighting coefficients b_1–b_n determined such that the filtered signal meets the system function

$$H(z)=b_0\cdot(1+b_1\cdot z(1+b_2\cdot z\,(\ldots(1+b_n\cdot z)))),$$

where z is the signal delay time through a single stage of said shift register.

4,605,914
SHUNT TRANSMISSION LINE FOR USE IN LEAKY COAXIAL CABLE SYSTEM

R. Keith Harman, Kanata, Canada, assignor to Senstar Security Systems Corp., Ontario, Canada

Filed Feb. 28, 1984, Ser. No. 584,445

Claims priority, application Canada, Jun. 16, 1983, 430532

Int. Cl.⁴ H01P *3/06;* **H01Q** *1/04*

U.S. Cl. 333—237 **21 Claims**

1. In a leaky cable system comprising a buried leaky coaxial cable transmission line which includes a center conductor and a coaxial shield, an external elongated conductor having width much smaller than the diameter of the shield and having length greater than one-half wavelength of signal carried by the cable, being fixed parallel to, and in proximity with the shield along the cable, but insulated therefrom.

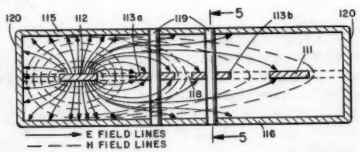
4,605,915
STRIPLINE CIRCUITS ISOLATED BY ADJACENT DECOUPLING STRIP PORTIONS

Henry D. Marshall, Ramona; Jeffrey K. Iida, La Jolla; Douglas J. Crow, Santee, and Lawrence O. Friend, San Diego, all of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Jul. 9, 1984, Ser. No. 629,121

Int. Cl.⁴ H01P *3/08*

U.S. Cl. 333—238 **8 Claims**



5. A circuitboard assembly for electromagnetically isolating adjacent stripline circuits disposed therein, comprising:

a pair of substantially parallel outer groundplanes;

a dielectric material sandwiched between said pair of outer groundplanes;

a center groundplane disposed within said dielectric material parallel to said outer groundplanes, said center groundplane having at least one decoupling strip portion, each decoupling strip portion positioned adjacent and between adjacent stripline circuits disposed coplanar to said center groundplane wherein each decoupling strip portion includes a nonconductive gap within the decoupling strip portion;

at least one pair of additional decoupling strips disposed within said dielectric material, one of the additional decoupling strips of said additional decoupling strip pair positioned adjacent one of said decoupling strip portions

and between said one of said decoupling strip portions and one of said outer groundplanes, the other of the additional decoupling strips of said additional decoupling strip pair positioned adjacent said one of said decoupling strip portions and between said one of said decoupling strip portions and the other of said outer groundplanes wherein each additional decoupling strip includes a nonconductive gap within the additional decoupling strip;

a plurality of conductive connectors extending from one of said outer groundplanes through said dielectric material, through said center groundplane, and through each pair of additional decoupling strips to the other of said outer groundplanes, for electrically interconnecting said outer groundplanes to said center groundplane and each one of said pair of additional decoupling strips, certain ones of said conductive connectors extending through at least one of said decoupling strip portions and at least one of said additional decoupling strips at predetermined spaced apart intervals adjacent a respective nonconductive gap; and

wherein said outer groundplanes, said certain ones of said conductive connectors, each of said decoupling strip portions and each of said pair of additional decoupling strips permit current loops to flow therethrough when a current is flowing through at least one stripline circuit so as to substantially reduce E-field and H-field coupling between an adjacent coplanar stripline circuit.

4,605,916

TRANSVERSE ELECTROMAGNETIC CELLS ADAPTED FOR ELECTROMAGNETIC PULSE TESTING

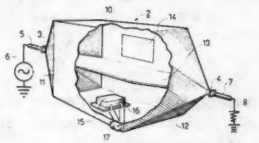
Ahikam Tehori, Nahariya, Israel, assignor to State of Israel, Ministry of Defense, Rafael Armament Auth., Haifa, Israel

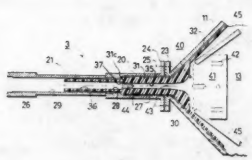
Filed Mar. 22, 1984, Ser. No. 592,101

Claims priority, application Israel, Feb. 3, 1984, 70865

Int. Cl.[4] H01P *1/00, 3/06*

U.S. Cl. 333—245 **9 Claims**





1. A transverse electromagnetic (TEM) cell adapted for electromagnetic pulse (EMP) testing, comprising: an outer metal shielded enclosure for enclosing the equipment to be tested and having a longitudinal axis and opposite tapered ends each defined by a plurality of inclined walls; an inner metal septum plate extending along the longitudinal axis of the shielding enclosure; and a respective connector assembly connected to each of the two tapered ends of the shielded enclosure for connection to a generator and a load, respectively; each of said connector assemblies comprising; an outer electrical conductor connected to a respective tapered end of the shielded enclosure; an inner electrical conductor connected to a respective end of the septum plate; and an insulating member having a first insulating section extending between the inner and outer conductors of the connector assembly, and a second insulating section extending between the tapered end of the shielded enclosure and the septum plate; said second insulating section of the insulating member comprising a plurality of insulating plates, one for each of said plurality of inclined walls, each plate being joined at one end to said first insulating section of the insulating member and extending therefrom substantially parallel to its respective inclined wall at the respective tapered end of the shielded enclosure.

4,605,917

COIL WIRE

Tatsumi Ide; Toshifumi Sakurai, both of Tokyo; Masahiro Izumi, Kanagawa, and Kimio Sugimura, Aichi, all of Japan, assignors to NEC Corporation, Japan

Filed Sep. 14, 1983, Ser. No. 532,189

Claims priority, application Japan, Sep. 14, 1982, 57-161438; Sep. 14, 1982, 57-161439; Sep. 14, 1982, 57-161440

Int. Cl.[4] H01H *51/08*

U.S. Cl. 335—128 **14 Claims**

1. In an electric device comprising an excitation winding together with contact members in a container held in a given hermetic condition, said contact members being eletromagnetically driven by said excitation winding, the improvement which comprises a coil wire constituting said excitation winding, said coil wire comprising a conductor, an insulation film formed on the conductor, and a lubricant film formed on the outer surface of the insulation film, said lubricant film comprising a member of the group consisting of a polypropylene glycol, and a material obtained by substituting a reactive group for a hydrogen at at least one end of polypropylene glycol.

4,605,918

HIGH SPEED CURRENT MAXIMUM TRIPPING DEVICE

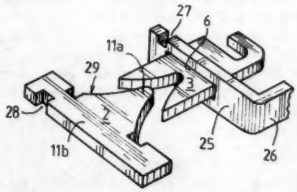
Pierre Lemarquand, and Luc Moreau, both of Dijon, France, assignors to La Telemecanique Electrique, France

Filed Mar. 20, 1985, Ser. No. 713,944

Claims priority, application France, Mar. 20, 1984, 84 04260

Int. Cl.[4] H01F *7/08*

U.S. Cl. 335—261 **10 Claims**



1. In a high speed current maximum tripping device for an apparatus providing protection against short circuits, comprising a coil associated with a magnetic circuit having a yoke and two cores one at least of which is mobile for controlling the break of the protection apparatus, the cores having complementary shapes and being disposed in the same plane while

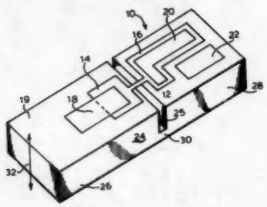
defining therebetween an air gap, said two cores are obtained by flat stamping and have complementary profiles of a generally curvilinear shape, that one of the two cores which is projecting comprising a nose and a body, the nose being connected to the body by sides whose slope with respect to the main axis of the projecting core increases progressively from the nose towards the body.

4,605,919

PIEZORESISTIVE TRANSDUCER

Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 432,620, Oct. 4, 1982, Pat. No. 4,498,229.
This application Sep. 21, 1984, Ser. No. 652,693
Int. Cl.[4] G01L *1/22*
U.S. Cl. 338—2 **10 Claims**



1. In a device for converting mechanical movement of two relatively movable parts of a mechanical device into electrical signals, characterized by

(a) a substrate comprised of piezoresistive semi-conductive material with the crystal orientation thereof being substantially in the (110) plane;

(b) groove means extending across said substrate defining said relative movable parts, and a hinge extending therebetween;

(c) the opposed walls of said groove means being in planes parallel to each other and at right angles to the floor of said groove means;

(d) at least one strain sensitive element extending across said groove means and perpendicular thereto;

(e) the crystal orientation of said at least one strain sensitive element being indexed substantially in the [111] direction;

(f) said at least one strain sesitive element being a unitary member having two end portions interconnected by and separated by an intermediate neck portion;

(g) said at least one unitary strain sensitive element being derived from the same piezoresistive semi-conductive material as said substrate;

(h) said end portions and said neck portion of said at least one strain sensitive element lying on a common axis;

(i) each of said end portions joined to one of said relatively movable parts of said substrate; and

(j) electrode means electrically connected to said end portions for detecting changes in electrical resistance between said end portions when said neck portion is subjected to stress resulting from relative movement of said substrate parts.

4,605,920

PRESCALING DEVICE AND METHOD

Alan C. Naisuler, Medford, Mass., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 2, 1983, Ser. No. 471,326
Int. Cl.[4] H03K *13/20*
U.S. Cl. 340—347 NT **25 Claims**

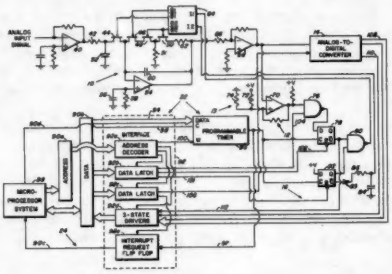
1. A prescaling device for integrating an input signal and for generating an integrator output signal scaled with respect to the input signal, comprising:

timer means for generating a timing signal at the end of each of a plurality of timing periods;

integrator means responsive to the input signal for integrating the input signal to generate an integrator output signal proportional thereto, the integrator means including means for holding the integrator output signal in response to a hold signal;

reference means for generating a reference signal;

comparator means responsive to the integrator output signal and the reference signal for generating a signal when the integrator output signal is in a predetermined relationship with the reference signal;



gating means for generating the hold signal in response to the comparator means signal and the timing signal whereby integration is halted at the end of one of the plurality of timing periods; and

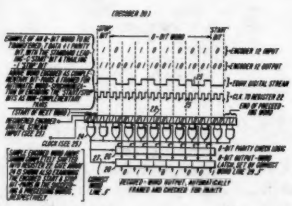
first counting means responsive to the timing signals for counting the number of timing periods before the integrator output signal was held to establish an integration timing range, such integration timing range providing an indication of a scaling factor to be applied to the integrator output signal.

4,605,921

DIGITAL WORD-FRAMING TECHNIQUE AND SYSTEM

Herbert S. Riddle, 2025 NW. Northrup, Suite 317, Portland, Oreg. 97209, and Mark Bodio, 4025 S. 45th Pl., Phoenix, Ariz. 85040

Filed Jun. 20, 1983, Ser. No. 506,197
Int. Cl.[4] H03M *13/00*
U.S. Cl. 340—347 DD **17 Claims**



1. A method for decoding an encoded signal that includes a series of encoded digital data messages, each message encoded in such a way that each bit thereof is contained in the ordering of a complementary bit pair, each encoded message being separated by a plurality of non-complementary bits, the method comprising:

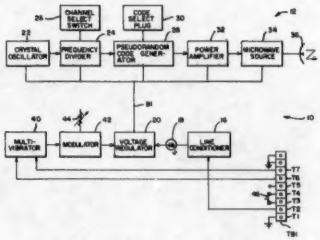
analyzing simultaneously a plurality of adjacent bit pairs of the encoded signal and producing an output when there are identified (i) a string of complementary bit pairs having a length in pairs equal to the number of bits in one of

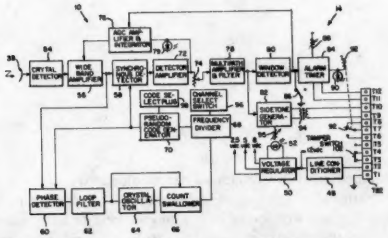
the messages and (ii) a plurality of non-complementary bits in at least one of the positions immediately preceding or immediately following the string.

4,605,922
INTRUSION DETECTOR

Daniel A. Blattman, and Harold G. Middleton, both of King County, Wash., assignors to Racon, Inc., Seattle, Wash.

Filed Sep. 14, 1984, Ser. No. 650,820
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—552 **52 Claims**





1. An intrusion detector system comprising a transmitter and a receiver, said transmitter having:

transmitter clock means for generating a transmitter clock at a selected clock frequency;

transmitter pseudorandom code generator means responsive to said transmitter clock for generating a predetermined transmitter pseudorandom code sequence signal;

source means for generating an electromagnetic signal;

modulator means for spread-spectrum modulating said electromagnetic signal in accordance with said transmitter pseudorandom code sequence signal; and

transmitter antenna means for transmitting said modulated electromagnetic signal through a desired zone of protection;

and said receiver having:

receiver antenna means for receiving said modulated electromagnetic signal after being transmitted through said zone of protection;

demodulator means for detecting and demodulating said modulated electromagnetic signal to recover said transmitter pseudorandom code sequence signal;

receiver clock means for generating a receiver clock at said selected clock frequency;

receiver pseudorandom code generator means responsive to said receiver clock for generating a receiver pseudorandom code sequence signal corresponding to said transmitter pseudorandom code sequence signal;

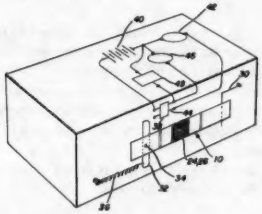
detector means for comparing said received transmitter pseudorandom code sequence signal to said receiver pseudorandom code sequence signal, and generating a detection signal proportional to the signal amplitude of said received transmitter pseudorandom code sequence signal when said receiver pseudorandom code sequence signal matches said received transmitter pseudorandom code sequence signal; and

monitor means for detecting changes in said detection signal resulting from the entry or movement of an intruder in said zone of protection, and for generating a signal in response thereto.

4,605,923
METHOD AND APPARATUS FOR DETECTION OF ORGANIC FLUIDS

Allen T. Marshall, Little Rock, Ark., assignor to Ensco, Inc., Little Rock, Ark.

Filed Nov. 2, 1984, Ser. No. 667,558
Int. Cl.[4] G08B *21/00*; G01N *3/18*
U.S. Cl. 340—604 **15 Claims**

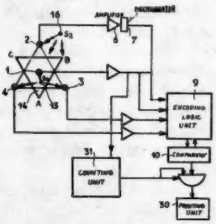


1. Apparatus for detecting of an organic fluid in or on a substrate, said apparatus comprising a pair of strips of fabric-material, one end of each strip being bonded to one end of the other strip at a joint by means of an organic fluid imbibing material sorbed therein, said imbibing material comprising a generally coherent mass of organic fluid imbibing latex polymer particles which swell and soften in the organic fluid, force applying means for placing said joint under tension so that said strips disjoin when said polymer has softened sufficiently, and sensing means for detecting the disjoining of said strips.

4,605,924
METHOD AND APPARATUS FOR ACOUSTICALLY MONITORING AN INDUSTRIAL PLANT

Jean Marini, Marly le Roi, and Bernard Audenard, Orgeval, both of France, assignors to Framatome & CIE, Courbevoie, France

Continuation-in-part of Ser. No. 301,848, Sep. 14, 1981, abandoned. This application Feb. 1, 1984, Ser. No. 575,491
Claims priority, application France, Oct. 2, 1980, 80 21163
Int. Cl.[4] G08B *23/00, 25/00*
U.S. Cl. 340—683 **2 Claims**



1. Apparatus for acoustically monitoring an industrial plant in a defined monitoring region of which incidental phenomena accompanied by acoustic waves may occur, the monitoring region being in the shape of an equilateral triangle and the apparatus comprising

(a) a set of four sensing devices arranged at the center of a first equilateral triangle constituting said monitoring region and at locations symmetrical with said center with respect to the sides of said first equilateral triangle, respectively, said sensing devices thus being arranged at the vertices and at the center of a second equilateral triangle having a common center with said first equilateral triangle; and

(b) for each of said sensing devices, an amplifier and a discriminator of signals emitted by said sensing device in response to the reception of acoustic waves, and a retriggerable monostable multivibrator following said discriminator and producing from the signal emitted and converted by said sensing device a signal of fixed amplitude and duration the initial instant of which corresponds to the exact instant of arrival of the signals at each of said sensing devices;

(c) a logic unit for determining the order of arrival of acoustic waves at said sensing devices by discrimination of the signals from said multivibrators;

(d) a comparator of said order of arrival with a predetermined coded order of arrival and an associated means for emitting a signal in the case of an identity of said orders of arrival; and

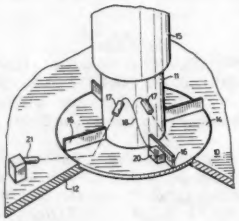
(e) alarm means which are triggered when said signal is emitted in the case of identity.

4,605,925

INFRA-RED TELEMETRY SYSTEM

James S. Mark, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Jun. 15, 1984, Ser. No. 621,296
Claims priority, application Canada, Sep. 9, 1983, 436336
Int. Cl.[4] G08C *19/36*
U.S. Cl. 340—870.29 **14 Claims**



1. An infra-red telemetry system for transmitting information between a rotating member having a fixed axis of rotation and a stationary member, comprising

a plurality of infra-red sources and at least one infra-red detector, said infra-red sources being spaced equidistant from one another around the axis of said rotating member and mounted to one of said rotating member and said stationary member, and said at least one infra-red detector being mounted to the other of said rotating member and stationary member,

circuit means responsive to an input information signal to code said information into a pulse train and to energize said infra-red sources simultaneously in accordance with pulses in said pulse train, and

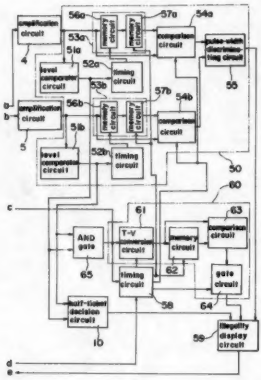
a surface exposed to at least one of said infra-red sources and at least one of said infra-red detectors during each revolution of said rotating member for bouncing infra-red radiation from one of said infra-red sources to one of said infra-red detectors.

4,605,926

ILLEGAL-SHEET-MATERIAL DETECTION APPARATUS IN SHEET MATERIAL MANUFACTURING MACHINE

Tetsuo Onishi, and Yoshihide Sugiyama, Wakayama, both of Japan, assignors to Duplo Seiko Corp. and Duplo Manufacturing Corp., both of, Japan

Filed Sep. 13, 1982, Ser. No. 417,601
Int. Cl.[4] H04Q *9/00;* **B65H** *7/12;* **G08B** *21/00*
U.S. Cl. 340—825.3 **14 Claims**



1. An abnormal sheet material detecting apparatus for use in a sheet material processing machine which is adapted to pass at intervals a given portion of every single sheet of material and to pick up the sheets, one by one, from a plurality of sheet materials, each one having approximately the same property, comprising:

a detecting circuit including a sensor for detecting a predetermined portion of a single sheet material at a given position in accordance with the amount of light transmitted through said single sheet material, with said amount of light being a variable value from sheet to sheet;

a first memory circuit for storing, in sequence, the detected value of each of said variable value of transmitted amount of light with respect to each of said single sheet material output from said detecting circuit and for outputting a representative signal;

a second memory circuit for storing an output signal from said first memory circuit after at least said single sheet material is passed through said sensor provided within said detecting circuit for detecting the transmitted amount of light;

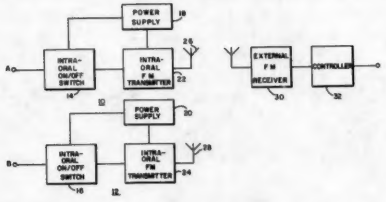
a comparison circuit for outputting signals, each corresponding to the difference between said detected and memorized value of said transmitted amount of light with respect to the nth (n being an integer of 1 or more) single sheet material stored within said second memory circuit and said detected and variable value for said transmitted amount of light with respect to the n+1th single sheet material, said output signal provided when the detecting circuit determines a difference beyond a predetermined upper and lower limit; and

a discrimination circuit for outputting an abnormal condition detecting signal when said output signal of said comparison circuit is continued beyond a predetermined time period.

4,605,927
INTRA-ORAL CONTROL UNIT AND SYSTEM

Philip Katz, Princeton Junction; Henry S. Brenman, Cinnaminson, both of N.J.; Henry Hamarman, Philadelphia, and Harold Schwartz, King of Prussia, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Aug. 26, 1983, Ser. No. 526,699
Int. Cl.[4] H04Q *9/00;* **H04B** *1/034;* **G08B** *21/00*
U.S. Cl. 340—825.19 **13 Claims**



1. An environmental control unit for transmitting control signals from patients to at least one external device comprising:

at least one intra-oral lingually operated switching means;

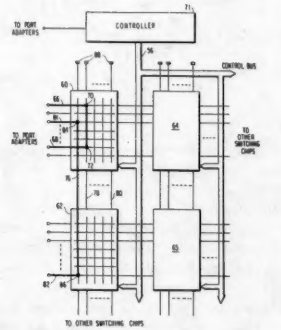
an intra-oral power supply; and

an intra-oral transmitter responsive to said switching means and to said power supply for transmitting radio frequency control signals from an intra-oral cavity to a position external to said patients upon lingual activation of said switching means.

4,605,928
FAULT-TOLERANT ARRAY OF CROSS-POINT SWITCHING MATRICES

Christos J. Georgiou, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,652
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—825.94 **12 Claims**



1. A switching network, comprising:

a plurality of cross-point switching matrices **(60,62,64,65)**, each comprising a plurality of first internal lines **(22–28)**, a plurality of second internal lines **(30,32)** perpendicular to said first internal lines and switch points **(34,35)** between said first internal lines and said second internal lines at each intersection of a first internal line with a second internal line; and

an array of first external lines **(45–50)** and of second external lines **(52, 54)**, each first external line being associated with a first internal line on plurality of said switching matrices and each second external line being associated with a second internal line on a plurality of said switching matrices;

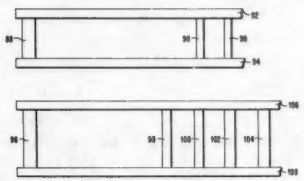
wherein said cross-points are selectively activatable in pairs for interconnecting any two of said first external lines for communication therebetween through only one of said second internal lines, if said any two first external lines are associated with the same switching matrix, or through two of said second internal lines and only one of said second external lines, if said any two first external lines are not associated with the same switching matrix; and

wherein any pair of first external lines are connectable by activating a pair of cross-points on any of a plurality of switching matrices if said pair of first external lines are associated with first internal lines of the same plurality of switching matrices, or by activating a cross-point on each of a selected pair of switching matrices, said pair of switching matrices being any pair of a plurality of pairs of switching matrices, if said pair of first external lines are associated with first internal lines of different pluralities of switching matrices, said selected pair of switching matrices being connected to a same second external line.

4,605,929
SURFACE ACOUSTIC WAVE PASSIVE TRANSPONDER HAVING OPTIMALLY-SIZED TRANSDUCERS

Halvor Skeie, San Jose, Calif., assignor to X-Cyte Inc., Mountain View, Calif.

Filed Jun. 30, 1983, Ser. No. 509,521
Int. Cl.[4] G01S *13/80;* **H03H** *9/42;* **H01L** *41/04*
U.S. Cl. 343—6.8 R **6 Claims**



1. In a passive transponder adapted for use in an interrogation system for transmitting a reply signal containing coded information in response to the receipt of an interrogating signal, said transponder comprising:

(a) a substrate having a substrate surface defining a path of travel for surface acoustic waves;

(b) a launch transducer arranged on said surface for converting said interrogating signal into a surface acoustic wave which propagates along said path of travel;

(c) a plurality of tap transducers arranged on said surface at spaced intervals along said path of travel for converting said surface acoustic wave into respective output signals; and

(d) circuit means connected to said tap transducers for combining said output signals to form said reply signal;

the improvement wherein said launch transducer and the one of said tap transducers closest to said launch transducer are sized such that C_1^2 is substantially equal to nC_2^2 where:

n is the number of tap transducers arranged in series along said path of travel;

C_1 is the energy coupling coefficient of said launch transducer; and

C_2 is the energy coupling coefficient of said one tap transducer.

5. In a passive transponder adapted for use in an interrogation system for transmitting a reply signal containing coded information in response to the receipt of an interrogating signal, said transponder comprising:

(a) a substrate having a substrate surface defining a path of travel for surface acoustic waves;

(b) a launch transducer arranged on said surface for converting said interrogating signal into a surface acoustic wave which propagates along said path of travel;

(c) a plurality of tap transducers arranged on said surface at spaced intervals along said path of travel for converting said surface acoustic wave into respective output signals; and

(d) circuit means connected to said tap transducers for combining said output signals to form said reply signal;

the improvement wherein said launch transducer is larger than the one of said tap transducers closest to said launch transducer, and wherein said tap transducers increase in size the farther they are away from said launch transducer,

whereby all tap transducers produce output signals of substantially equal energy in response to a surface acoustic wave that propagates along said path of travel.

4,605,930

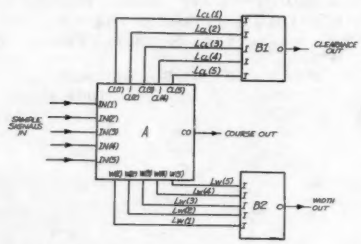
INTEGRAL MONITOR FOR ILS LOCALIZER

Robert W. Redlich, 9 Grand Park Blvd., Athens, Ohio 45701

Filed Apr. 20, 1983, Ser. No. 468,170

Int. Cl.[4] G01S *1/16*

U.S. Cl. 343—413 **1 Claim**



1. A system for ground based monitoring of the signals radiated by an Instrument Landing System Localizer antenna array operating at wavelength λ, said array consisting of N individual antennas disposed along a line perpendicular to a runway, each individual antenna being fitted with sampling means for obtaining a signal proportional to the radiofrequency current driving that antenna, each individual antenna being identified herein by a distinct index number n, the distance between antenna n and a reference point on the line of the array being identified here as S(n), said monitoring to consist of prediction of signals radiated by said array at three specified angles from the centerline of said runway, one such angle being zero degrees, the other two being identified here as θ_w and θ_{cl}, said monitoring system to consist of the combination of,

N input terminals designated here as IN(1) through IN(N), IN(n) being connected to said sampling means of antenna n by a transmission line of characteristic resistance R_o, all such lines being of equal length,

for each input terminal, the parallel combination of four circuits connected between that terminal and circuit ground, said four circuits being designated here as COURSE(n), WIDTH(n), CLEARANCE(n), and MATCHING(n), the index number of each circuit being that of the input terminal to which it is connected, and the four circuits being further defined as follows,

COURSE(n) consisting of a resistor R_c between IN(n) and a first output terminal, said output terminal being connected to ground through an impedance less than $R_c/20$,

WIDTH(n) consisting of a resistor R_w between IN(n) and one end of a transmission line of length $L_w(n)$ and characteristic resistance R_o, the other end of said line being connected to one terminal of a resistor R_o, the other terminal of said resistor R_o being connected to a second output terminal, said second terminal being connected to ground through an impedance less than $R_o/5$, and $L_w(n)$ being determined from the formula $L_w(n)=S(n)\times\sin(\theta_w)\times(2\pi/\lambda)$,

CLEARANCE(n) consisting of a resistor $R_{cl}(n)$ between IN(n) and one end of a transmission line of length $L_{cl}(n)$, characteristic resistance R_o, and attenuation A(n) decibels, the other end of said line being connected to one terminal of a resistor R_o, the other terminal of said resistor R_o being connected to a third output terminal, said third terminal being connected to ground through an impedance less than $R_o/5$, $L_{cl}(n)$ being determined from the formula $L_{cl}(n)=S(n)\times\sin(\theta_{cl})\times(2\pi/\lambda)$, and $R_{cl}(n)$ being determined from the formula $R_{cl}(n)=10^{(A(1)-A(n))/20}\times(R_{cl}(1)+R_o)-R_o$,

MATCHING(n) consisting of a resistor $R_m(n)$ between IN(n) and ground, $R_m(n)$ being determined from the formula $R_m(n)=(1/R_o-1/(R_o+R_w)-1/(R_o+R_c)-1/(R_{cl}(n)+R_o))^{-1}$.

4,605,931

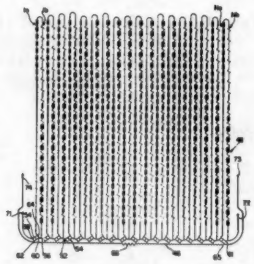
CROSSOVER TRAVELING WAVE FEED FOR MICROSTRIP ANTENNA ARRAY

James B. Mead, Brookside; Leonard Schwartz, Montville, both of N.J., and Emile J. Deveau, Pleasantville, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 14, 1984, Ser. No. 650,631

Int. Cl.[4] H01Q *3/26, 9/38;* H03B *5/00*

U.S. Cl. 343—700 MS **10 Claims**



1. In a microstrip or stripline antenna, a feed system for accessing at least first and second radiating array groups, the system comprising:

a first traveling feed;

a plurality of crossover structures, each structure having first and second ports for transmitting a first signal therebetween, and third and fourth ports for transmitting a second signal therebetween;

means serially interconnecting the first and second ports of a plurality of structures thereby forming a second traveling feed;

means connecting the first and second ports of the interconnected structures to correspondingly positioned arrays of the first group;

means connecting the third ports of the interconnected structures to correspondingly positioned spaced points along the first traveling feed;

means connecting the fourth ports of the interconnectd structures to correspondingly positioned arrays of the second group;

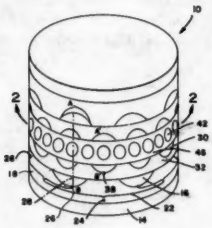
whereby the first and second traveling feeds couple their respective signals to the array groups without significant interaction therebetween.

4,605,932

NESTED MICROSTRIP ARRAYS

Frank D. Butscher, San Jose, and Michael J. Gegan, Menlo Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 618,013
Int. Cl.[4] H01Q 1/38
U.S. Cl. 343—700 MS 10 Claims



1. A microstrip antenna system comprising:

(a) a first microstrip antenna for operating in a first frequency band, said first antenna having at least one microstrip radiating element spaced from a ground plane by a dielectric substrate, said at least one radiating element having a feed point located so that electric fields are present only in specific areas along the edges of said at least one element with the remainder of said at least one element having no appreciable electric field concentration;

(b) a second microstrip antenna for operating in a second higher frequency band, said second antenna having at least one microstrip radiating element spaced from a ground plane by a dielectric substrate, said second microstrip antenna being disposed over said first microstrip antenna so that said second microstrip antenna covers only areas of said first microstrip antenna having no appreciable electric field concentration; and

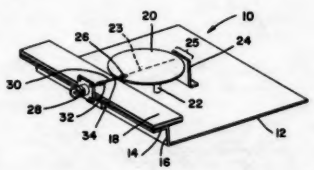
(c) a dielectric layer separating the ground plane of said second antenna from said first antenna.

4,605,933

EXTENDED BANDWIDTH MICROSTRIP ANTENNA

Frank D. Butscher, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 618,011
Int. Cl.[4] H01Q 1/38
U.S. Cl. 343—700 MS 10 Claims



1. A microstrip antenna having extended bandwidth comprising:

(a) a first conducting ground plane;

(b) a second conducting ground plane disposed parallel to and above said first ground plane, said second ground plane being smaller than said first ground plane and disposed above the rear of said first ground plane; said second ground plane being electrically connected to said first ground plane;

(c) a thin dielectric layer disposed on said second ground plane,

(d) a planar radiating element disposed above said first ground plane, said planar radiating element being disposed approximately coplanar with, in front of, and electrically separated from said second ground plane, and;

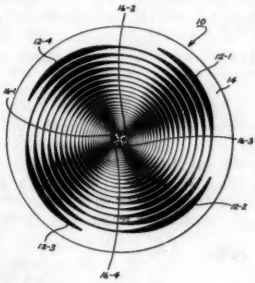
(e) means for feeding said planar radiating element, said means for feeding being disposed above said second ground plane on said dielectric layer, said means for feeding providing an approximately coplanar feed and a linearly polarized signal to said planar radiating element.

4,605,934

BROAD BAND SPIRAL ANTENNA WITH TAPERED ARM WIDTH MODULATION

George S. Andrews, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 2, 1984, Ser. No. 637,121
Int. Cl.[4] H01Q 1/36
U.S. Cl. 343—895 17 Claims



1. A wide band multiarm spiral antenna for operation with both left-hand and right-hand circularly polarized radiation patterns, said spiral antenna comprising a plurality of conductive antenna arms that extend outwardly about an axis of rotation, each said antenna arm being formed by a series of cells that are configured and arranged to reflect current flowing outwardly in the antenna arm which includes those cells, the length of said cells increasing as a function of increasing distance from said axis of rotation, each said cell being configured and arranged to exhibit a monotonically decreasing electrical impedance over a first portion of the length of each said cell and a monotonically increasing electrical impedance over a second portion of said length of each said cell

4,605,935

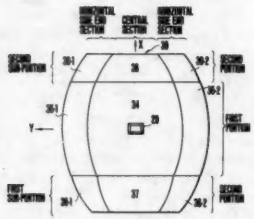
SHAPED BEAM REFLECTOR ANTENNA

Mitsuhiro Kusano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,712
Claims priority, application Japan, Oct. 28, 1983, 58-202372
Int. Cl.[4] H01Q 15/16
U.S. Cl. 343—914 2 Claims

1. In a shaped beam antenna of the type comprising a main reflector and a feed horn for irradiating an electromagnetic wave upon said main reflector, said main reflector including, in sectional planes inclusive of a Y - Z plane and planes parallel thereto, a central section and horizontal side end sections adjoining said central section, where Cartesian coordinates are assumed having an origin near said feed horn, a Z-axis extending in a direction of the horizontal center axis of said feed horn, and X- and Y-axes extending in planes perpendicular to said Z-axis, the improvement wherein said central section has a

plurality of torus reflector segments and each of said side end sections has a plurality of parabolic reflector segments, and said torus and parabolic reflector segments are grouped into first and second portions, said first portion having the reflector segments which are symmetrical with respect to the Y - Z plane, said second portion having first and second sub-portions, the reflector segments of said first sub-portion and those of said second sub-portion being asymmetrical with respect to the Y - Z plane, whereby the maximum radiation direction of the beam reflected from said first portion lies in said Y - Z plane, and the maximum radiation direction of the beam reflected from said second portion lies in planes other than said Y - Z plane.



4,605,936

THERMAL HEAD WITH CUTAWAY SUBSTRATE

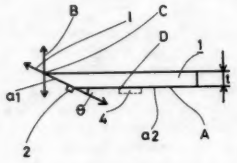
Yoichi Yamamoto, and Mitsuhiro Shimada, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 6, 1984, Ser. No. 637,979

Claims priority, application Japan, Aug. 25, 1983, 58-156730

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **3 Claims**



1. A thermal head for a recording apparatus comprising:

a substrate having a first flat surface and a second surface generally opposed thereto and having a flat surface and an oblique surface therewith;

a group of thermal resistor elements formed on said oblique surface of said substrate;

wiring means for said group of thermal resistor elements; and

a driver element for driving said group of thermal resistor elements, said driving element being mounted on said flat surface of said second surface of said substrate.

4,605,937

POSTAL METER THERMAL PRINTER CONTROL

Donald T. Dolan, Ridgefield; William A. Ross, Darien, and Kenneth A. Terry, Fairfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 19, 1984, Ser. No. 622,037

Int. Cl.[4] G01D *15/10;* **G07G** *1/00;* **B41J** *3/20*

U.S. Cl. 346—76 PH **4 Claims**

1. In an electronic postal meter of the type including accounting means and means for inputting postal data, the improvement comprising:

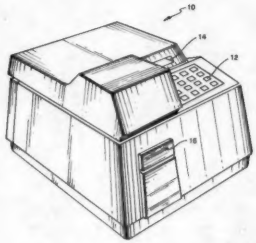
(a) means for obtaining said postal data in a first format indicative of postal value and other variable indicia; and

(b) printing means for printing postal value along with said other indicia, said printing means comprising:

(i) a thermal print head which includes a plurality of thermal heating elements operative to receive voltage pulses for heating thereof to a predetermined temperature;

(ii) a tape moving means for moving a tape past the individual elements of the print head;

(iii) a thermal transfer ribbon transportation means, said transfer ribbon having a meltable ink composition



thereon, portions of said thermal transfer ribbon being carried into juxtaposition between said thermal elements and said tape wherein when said thermal elements are heated to said predetermined temperature the meltable composition adjacent said heated elements is transferable to the tape; and

(iv) means for converting the data in the first format into logic signals for controlling the time of the heating of said individual elements wherein the transfer of meltable ink composition by a predetermined sequential pattern of heating of individual heating elements enables the formation of a predetermined pattern of meltable ink composition on the tape.

4,605,938

THERMAL TRANSFER RECORDING APPARATUS

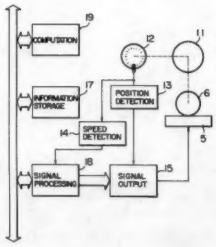
Jyunichi Matsuno, Toride; Masataka Kawauchi, Ishioka; Masashi Yoshida, Nakaminato, and Satoshi Kawamura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,365

Claims priority, application Japan, Apr. 27, 1984, 59-83716

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **16 Claims**



1. A recording apparatus of thermal transfer type comprising:

a carrier supporting a coating of a thermally transferable recording material and movable along a predetermined path;

a platen roller rotatably mounted for supporting and transporting a recording medium and disposed so that said supported recording medium faces said carrier moving through said predetermined path;

a thermal head having a plurality of linearly arrayed heat generating elements for being urged against said platen roller in a recording mode and selectively energizable, thereby producing a thermal energy adapted to transfer the recording material corresponding to the energized heat generating elements onto the recording medium supported by said platen roller:

driving means for continuously driving said platen roller;

rotation detecting means for detecting a rotation speed of said platen roller,

position detecting means for detecting an angular position in rotation of said platen roller;

means for producing a character and pattern signal in accordance with the rotational speed of said platen roller and a desired density tone of the record produced on said recording medium so that the thermal energy produced by the energized heat generating elements is at a level suitable to obtain the desired density tone of the record, and

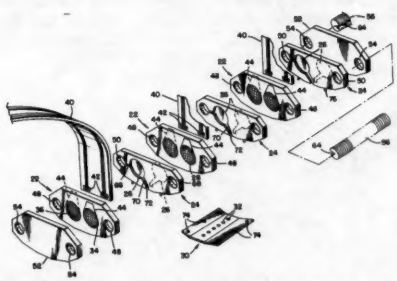
means for controlling the density tone in response to an output signal of said position detecting means while said platen roller is continuously driven so as to selectively energize said heat generating elements according to said character and pattern signal, thereby producing on said recording medium a record of dots with the desired density tone corresponding to said character and pattern signal.

4,605,939

INK JET ARRAY

David W. Hubbard, Stamford, and Frank E. Seestrom, Weston, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 30, 1985, Ser. No. 771,523
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R **14 Claims**



1. An ink jet printing head comprising:

a plurality of successive pairs of first and second plates in an alternating sequence;

means joining said first and second plates in contiguous side by side relationship;

each of said first plates having at least one cavity therein adapted to receive printing ink therein, a first channel extending between the cavity and a source of supply of printing ink, and a second channel extending between the cavity and a nozzle through which the ink can be ejected in droplet form;

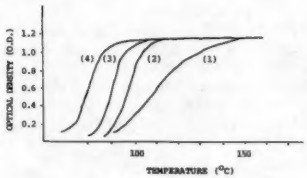
each of said second plates including monomorphic transducer means generally overlying each cavity in said first plate to form a chamber therewith and operable to induce pulsed pressure waves to the ink in its associated chamber to draw ink from the source of supply and eject it through the nozzle in droplet form, said second plates being effective, when held in contiguous side by side relationship against said first plates by said joining means, to confine the ink in said printing head to the chamber and each of said first and second channels.

4,605,940

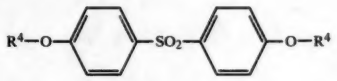
THERMORESPONSIVE RECORDING PAPER SHEET

Ryoichi Kinishi, Fukuoka; Eisaburo Kaku, Niiza, and Naoki Hanayama, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP83/00015, § 371 Date Sep. 11, 1984, § 102(e) Date Sep. 11, 1984, PCT Pub. No. WO84/02882, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 17, 1983, Ser. No. 653,010
Int. Cl.[4] B41M *5/18*
U.S. Cl. 346—209 **8 Claims**



1. A thermoresponsive recording paper sheet comprising a normally colorless or pale-colored chromogenic substance in combination with a phenolic compound and the underlying paper substrate, said sheet further comprises a diether of the formula:



wherein R^4 is alkyl of 1 to 5 carbon atoms, benzyl or phenethyl.

4,605,941

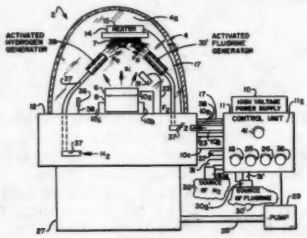
AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS

Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 428,092, Sep. 29, 1982, Pat. No. 4,485,389, which is a continuation of Ser. No. 193,072, Oct. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374. This application Nov. 7, 1984, Ser. No. 669,194
Int. Cl.[4] H01L *45/00*
U.S. Cl. 357—2 **8 Claims**

1. An electrostatic image-producing device, the device including an improved amorphous semiconductor body formed from a solid host matrix of amorphous semiconductor alloy material; the amorphous semiconductor of said amorphous semiconductor alloy material selected from the group consisting essentially of silicon, germanium or mixtures thereof; said amorphous semiconductor alloy material disposed upon an electrically conductive substrate and having electronic config-

urations with an energy gap; said host matrix of the amorphous semiconductor alloy material further including at least one



compensating material for reducing the density of localized states in said energy gap.

4,605,942

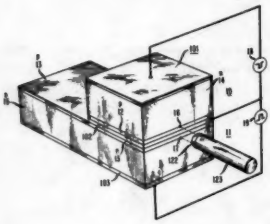
MULTIPLE WAVELENGTH LIGHT EMITTING DEVICES

Irfan Camlibel, Morris County; Aland K. Chin, Union County, and Brymer H. Chin, Somerset County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 9, 1984, Ser. No. 658,568

Int. Cl.[4] H01L *33/00*; H01S *3/19*

U.S. Cl. 357—17 **9 Claims**



1. A multiwavelength light emitting device comprising:

two light emitting devices, each comprising a confined light emitting region which emits light at a different wavelength, said devices being bonded with a conductive material that forms a common electrode between them, the light emitting regions being sufficiently close together to couple light from both regions into a single optical fiber; and

means for electrically addressing each device separately.

4,605,943

COMPOSITE OPTICAL SEMICONDUCTOR DEVICE

Masaru Nakamura, Kawaguchi; Kouichi Nitsuta, Yokohama, and Takeshi Ozeki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 16, 1984, Ser. No. 571,379

Claims priority, application Japan, Jan. 14, 1983, 58-3359

Int. Cl.[4] H01L *33/00*

U.S. Cl. 357—17 **10 Claims**

1. A composite optical semiconductor device comprising:

a first region having a first conductivity type formed in a semiconductor substrate;

a second region having a second conductivity type formed on top of said first region, thereby forming a PN junction at the boundary between said first region and said second region;

a first electrode connected to said first region;

a second electrode formed on top of said second region;

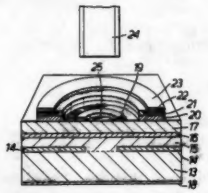
said first and second electrodes and first and second regions thereby forming a light emitting diode so that is emitted when a voltage is applied between the first and second electrodes;

said second region including a light transmitting portion for transmitting light emitted by said light emitting diode;

a third region formed on top of said second region;

a third electrode formed on top of said third region;

said second and third electrodes and said second and third



regions forming a photodetecting element for detecting light emitted from said light emitting diode;

said second electrode being arranged within the third electrode in the area of the light transmitting portion;

wherein the current path for the light emitting diode between said first electrode and said second electrode is separated from the current path of the photodetecting element between said second electrode and said third electrode.

4,605,944

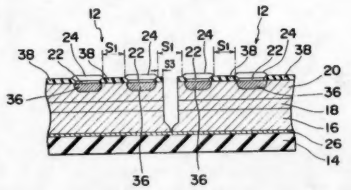
LED ARRAY DEVICE FOR PRINTER

Toshihiko Ishii, and Hiromi Takasu, both of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed Sep. 11, 1984, Ser. No. 649,340

Int. Cl.[4] H01L *33/00*

U.S. Cl. 357—17 **11 Claims**



1. An LED array device comprising:

a plurality of LED units, each having a plurality of LED elements aligned straight in a predetermined pitch with a predetermined spacing between neighboring LED elements, said plurality of LED units aligned straight with their end edges confronting each other such that an array of LED elements on one LED unit is in alignment with an array of LED elements on a next LED unit with said predetermined pitch being maintained, a spacing between an LED element positioned at the end of said LED unit and said end edge of said LED unit being less than a half of said predetermined spacing;

an electrode means extending from each LED element; and

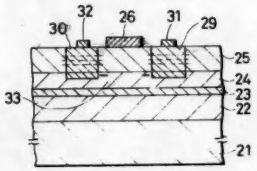
board means for supporting said plurality of LED units.

4,605,945

SEMICONDUCTOR DEVICE

Yoshifumi Katayama, Tokorozawa; Yasuhiro Shiraki, Hino; Ken Yamaguchi, Higashikurume; Yoshimasa Murayama, Koganei; Yasushi Sawada; Toshiyuki Usagawa, both of Kokubunji, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,446
Claims priority, application Japan, May 11, 1983, 58-80895
Int. Cl.[4] H01L *29/80*
U.S. Cl. 357—22 22 Claims



1. A semiconductor device having at least a first semiconductor layer and a second semiconductor layer which are in contact with each other so as to form a heterojunction therebetween, and in which the edge of the conduction band of the first semiconductor layer is lower in energy than the edge of the conduction band of the second semiconductor layer in the vicinity of the heterojunction, said device further comprising at least one pair of electrodes which are electrically connected with the first semiconductor layer, source and drain regions formed in the first and second semiconductor layers and respectively electrically connected to the at least one pair of electrodes, and means to control carriers generated in the vicinity of said heterojunction; wherein said second semiconductor layer includes a low impurity concentration region of a concentration of at most 10^{15} cm^{-3} formed between said source and drain regions except regions immediately adjacent the source and drain regions, and high impurity concentration regions immediately adjacent the source and drain regions in the region between the source and drain regions, and wherein the first semiconductor layer includes at least one region containing an impurity which has a conductivity type identical or opposite to that of the impurity contained in the source and drain regions, said at least one region being spaced from said heterojunction.

4,605,946

FET CHARGE SENSOR AND VOLTAGE PROBE

Paul A. Robinson, Jr., LaCanada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 16, 1984, Ser. No. 641,146
Int. Cl.[4] H01L *29/78, 27/14*
U.S. Cl. 357—23.1 8 Claims

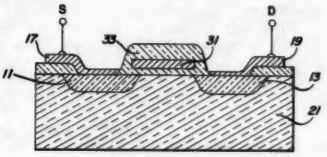
1. A voltage/charge sensor device for accumulating charges to be measured in an electric field, said sensor comprising

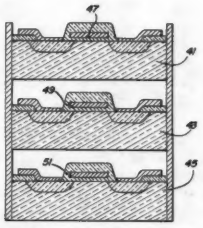
a first field effect transistor structure having a passivating overlay, a biased metal gate electrode and an inducible conducting channel between source-to-drain electrodes; and

a first modulating means accumulating a charge to be measured for modulating the source-to-drain conductivity in accordance with the charges that are accumulated;

said modulating means characterized by including

a first insulating layer that is a multiple of thicknesses greater than said passivating layer; and





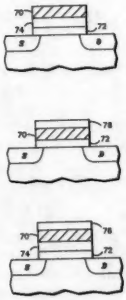
said first layer surrounding only said metal gate electrode and also coming into contact with said conductive channel.

4,605,947

TITANIUM NITRIDE MOS DEVICE GATE ELECTRODE AND METHOD OF PRODUCING

J. B. Price; Philip J. Tobin, both of Scottsdale; Fabio Pintchovski, Mesa, all of Ariz., and Christian A. Seelbach, San Jose, Calif., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 472,517, Mar. 7, 1983. This application Sep. 24, 1985, Ser. No. 779,533
Int. Cl.[4] H01L *29/78, 23/50, 23/52, 29/62*
U.S. Cl. 357—23.15 3 Claims



1. In a metal oxide semiconductor device, a gate electrode and interconnect overlying an insulator comprising: a layer of titanium nitride overlying the insulator; and a layer of silicon overlying the layer of titanium nitride.

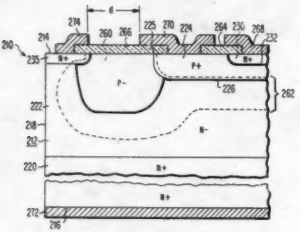
4,605,948
SEMICONDUCTOR STRUCTURE FOR ELECTRIC FIELD DISTRIBUTION

Ramon U. Martinelli, Hightstown Borough, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 2, 1984, Ser. No. 637,027

Int. Cl.[4] H01L *29/72, 29/06, 29/90, 29/34*

U.S. Cl. 357—34 **10 Claims**



1. A semiconductor structure, comprising:

a silicon wafer having first and second opposing major surfaces and an edge,

a first region, of first conductivity type, contiguous with the second surface and including an edge portion which is contiguous with said edge at the first surface;

a second region, of second conductivity type, extending into the wafer from the first surface so as to form a PN junction with the first region at a predetermined depth from the first surface;

a third region, of second conductivity type, extending into the wafer from the first surface to a depth greater than said predetermined depth, the third region being disposed between and being contiguous with the second region and said edge portion, and having an areal charge concentration of approximately $1\text{–}2\times10^{12}$ cm^{-2};

an insulating layer overlying the third region on the first surface, said insulating layer overlying the boundary between the edge portion and the third region, and the boundary between the second region and the third region;

a first electrode contacting the edge portion at the first surface and overlying the insulating layer; and

a second electrode contacting the second region at the first surface, overlying the insulating layer, and being spaced a predetermined distance from the first electrode; said predetermined distance, in microns, being equal to the bulk breakdown voltage, in volts, divided by the critical field for avalanche breakdown, in volts per micron, of the PN junction between the first and second regions.

4,605,949
SEMICONDUCTOR DEVICE WITH INTERDIGITATED ELECTRODES

Michael J. Moore, Poynton, and David H. Paxman, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

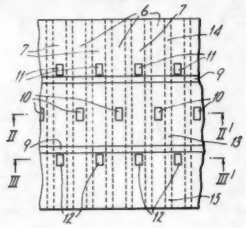
Filed Jul. 26, 1984, Ser. No. 634,892

Claims priority, application United Kingdom, Aug. 26, 1983, 8322977

Int. Cl.[4] H01L *23/48*

U.S. Cl. 357—71 **9 Claims**

1. A semiconductor device comprising a semiconductor body having a major surface and alternate regions of opposite first and second conductivity types at said major surface, a first set of electrode fingers at a first metallization level on said major surface and contacting the regions of the first conductivity type, a second set of electrode fingers at the first metallization level on said major surface and contacting the regions of the second conductivity type, a first electrically-conductive bonding pad at a second metallization level and electrically connected to the electrode fingers of the first set, and a second electrically conductive bonding pad at said second metallization level, which second bonding pad is electrically isolated from the first bonding pad and is electrically connected to the electrode fingers of the second set, and and insulating layer overlying the two sets of electrode fingers, the first bonding pad extending at the second metallization level on the insulating layer transversely over the electrode fingers and being electrically connected to the first set of electrode fingers through at least one window in the insulating layer such that in



operation of the device the voltage drop along each electrode finger of said first set is substantially equal, and the second bonding pad extending at the second metallization level on the insulating layer transversely over the electrode fingers an being electrically connected to the second set of electrode fingers through at least one other window in the insulating layer such that in operation of the device the voltage drop along each electrode finger of said second set is substantially equal.

4,605,950
TWO CHANNEL COMPATIBLE HIGH DEFINITION TELEVISION BROADCAST SYSTEM

Abraham A. Goldberg, Stamford; Renville H. McMann, New Canaan, and John P. Rossi, Stamford, all of Conn., assignors to CBS Inc., New York, N.Y.

Filed Sep. 20, 1983, Ser. No. 534,026

Int. Cl.[4] H04N *9/42, 9/38*

U.S. Cl. 358—11 **33 Claims**

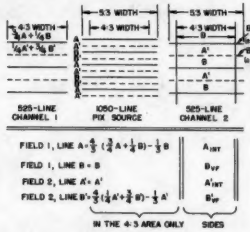
27. A television transmission system compatible with a television system having N television lines and a standard aspect ratio picture format, said system comprising:

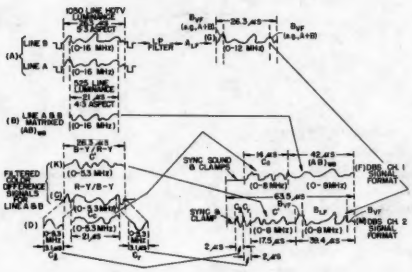
a source of television picture signal having 2N television lines and a wider than standard aspect ratio picture format and the same height as said standard picture format,

first means for deriving from said source for transmission through a first transmission channel a first television signal having N lines and said standard aspect ratio, and

second means for deriving from said source for transmission through a second transmission channel simultaneously with the transmission of said first signal a second television signal having N lines and said wider than standard

aspect ratio and containing information which when combined with that of said first television signal produces a




1050 LINE HDTV CAMERA 5:3 ASPECT
525 LINE CONVERTER 4:3 ASPECT
525 LINE LUMINANCE
MATRIXED
FILTERED COLOR DIFFERENCE SIGNALS
SYNC, SOUND & CLAMPS
525 LINE CHROMINANCE
525 LINE CHROMINANCE
SYNC & CLAMPS
(F) 525 LINE CH 1 SIGNAL FORMAT
(G) 525 LINE CH 2 SIGNAL FORMAT

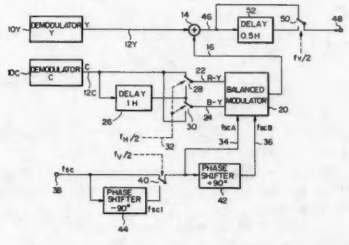
high definition display having 2N lines and said wider than standard aspect ratio picture format.

4,605,951

APPARATUS FOR CONVERTING FIELD VIDEO SIGNALS INTO FRAME VIDEO SIGNALS

Michio Kuribayashi, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1984, Ser. No. 658,439
Claims priority, application Japan, Oct. 13, 1983, 58-189832
Int. Cl.[4] H04N *11/20, 11/22, 9/80*
U.S. Cl. 358—11 **4 Claims**



1. An apparatus for converting field video signals into frame video signals comprising:

modulator means for modulating a chrominance subcarrier with a color signal contained in a field video signal;

signal composing means for combining the modulated subcarrier with a luminance signal of the field video signal;

signal converter means for producing a frame video signal including interlaced fields with a time delay applied to alternative ones of the fields of output signals delivered from said signal composing means, said time delay being substantially equal in period to half a horizontal scanning time period of the fields;

signal generator means, operative in response to a first signal which is substantially equal in frequency to the chrominance subcarrier, for generating a second signal which is shifter in phase by substantially 90 degrees with respect to said first signal; and

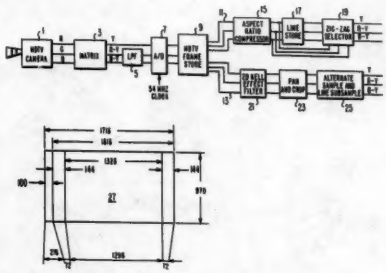
switching means for alternately selecting said first and second signals for each field, supplying said modulator means with the selected one of said first and second signals as the chrominance subcarrier.

4,605,952

COMPATIBLE HDTV SYSTEM EMPLOYING NONLINEAR EDGE COMPRESSION/EXPANSION FOR ASPECT RATIO CONTROL

Kerns H. Powers, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 485,446, Apr. 14, 1983, abandoned. This application Jun. 14, 1983, Ser. No. 504,374
Int. Cl.[4] H04N *11/20, 11/04*
U.S. Cl. 358—13 **8 Claims**



1. A wide-angle television system compatible with a standard definition television system having a relatively narrow-angle field of view comprising:

generating means for generating video samples during an active line portion of a wide-angle television horizontal line, said video samples representing first and second portions of a scene, said first portion being representative of the active display portion of a standard definition television receiver and said second portion being representative of a part of said scene exclusive of said active display portion of said standard definition receiver;

compression means for time compressing said second portion of said scene such that the number of said video samples within said second portion are reduced by approximately a factor of 2; and

setting means for setting the total number of samples within said active line portion of said wide-angle television horizontal line to a value of 1440 samples which samples are compatible with the world standard studio-equipment sample rate of 13.5 MHz.

3. A wide-angle television system compatible with a standard definition television system having a relatively narrow-angle field of view comprising:

a source of television signals representative of a wide-angle view of an image of a scene, said signals being quantized at a first given rate to provide video samples representative of said wide-angle scene; said video samples including a first and second pluralities of samples representative of first and second portions of the active scan of said wide-angle scene and a third plurality of samples representative of a third portion of said active scan spatially positioned between said first and second portions; and

compression means for time compressing said samples, said

time compression being effected such that the third plurality of samples are compressed linearly so that the compressed third plurality of samples fit into the active display portion of a standard definition television receiver and the first and second pluralities are nonlinearly compressed to provide a wide-angle high-definition television system.

4,605,953

DIGITAL PAL COLOR TELEVISION SIGNAL DEMODULATORS

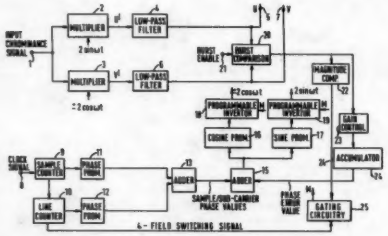
James H. Wilkinson, and David M. Creed, both of Basingstoke, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 1, 1984, Ser. No. 575,756

Claims priority, application United Kingdom, Feb. 4, 1983, 8303068

Int. Cl.[4] H04N *9/65, 9/66, 11/18*

U.S. Cl. 358—24 **8 Claims**



1. Apparatus for demodulating U and V color component signals from an input chrominance signal of a digital PAL color television signal which was derived from an analog PAL color television signal occurring in successive fields each formed of a plurality of successive horizontal lines and having said U and V color component signals modulated on a sub-carrier signal thereof, said digital television signal being derived by sampling said analog television signal at a sample frequency yielding a predetermined number of samples per horizontal line at corresponding sample positions such that said sub-carrier signal has a predetermined phase at each said sample position, said apparatus comprising:

first memory means for storing first values representing the phases of the sub-carrier signal at a first sample position of each of the successive lines of four successive fields of said analog television signal;

second memory means for storing second values representing relative phases of said sub-carrier signal at successive sample positions along a horizontal line relative to the phase at the first sample position thereof;

means to derive from said first and second values stored in said first and second memory means third values representing the phases at successive sample positions of each of the successive samples of said sub-carrier signal in eight successive fields of said analog television signal;

means to derive from said third values first and second quadrature amplitude values of said sub-carrier signal in synchronism with the sample frequency of said input chrominance signal; and

means to demodulate said input chrominance signal with each of said quadrature amplitude values of said sub-carrier signal to derive said U and V color component signals.

4,605,954

METHOD OF AND ARRANGEMENT FOR ADJUSTING COLOR SATURATION IN A VIDEO PRINTER

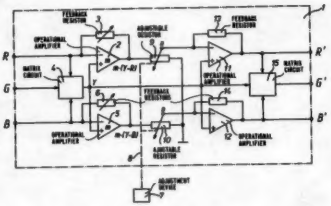
Friedrich Bestenreiner, Gruenwald; Immo Boie, Langenfeld, and Josef Helmberger, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,494

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315616

Int. Cl.[4] H04N *9/68*

U.S. Cl. 358—27 **22 Claims**



1. A method of adjusting color saturation in a color printer, particularly a video printer, comprising the steps of:

(a) generating a luminance signal for an image to be printed by processing a first blue signal representing a characteristic of the image in blue together with a first red signal and a first green signal respectively representing the characteristic in red and green;

(b) forming a pair of unadjusted difference signals by subtraction of said luminance signal and two selected ones of said first signals;

(c) adjusting each of said unadjusted difference signals to obtain a pair of adjusted difference signals;

(d) deriving a pair of modified signals for the two colors corresponding to said selected signals by subtraction of said luminance signal and said adjusted difference signals; and

(e) calculating a modified signal for the third color by combining said luminance signal with said pair of modified signals.

4,605,955

COLOR BALANCE ADJUSTING APPARATUS FOR COLOR TELEVISION CAMERAS

Takaaki Hashimoto, Noda; Kazushi Minagawa, Yokohama, and Yozo Iida, Komae, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,716

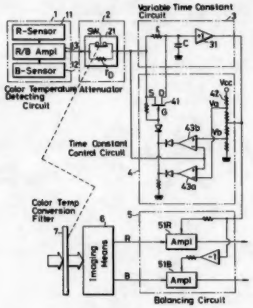
Claims priority, application Japan, May 7, 1982, 57-75313

Int. Cl.[4] H04N *9/64*

U.S. Cl. 358—29 **3 Claims**

1. In a color balance adjusting apparatus for automatically adjusting the gain of a chromaticity signal circuit of a color television camera including a color temperature conversion filter adapted to be moved into and out of an incident light path of imaging means in accordance with an output of a color temperature detecting circuit for detecting the color temperature of an illuminating light of an object for shooting, the combination comprising:

at least one attenuating circuit for selectively attenuating an output of said color temperature detecting circuit in dependence on whether said color temperature conversion filter is positioned in said incident light path.

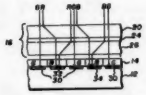


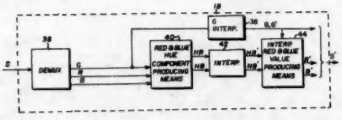
4,605,956

SINGLE-CHIP ELECTRONIC COLOR CAMERA WITH COLOR-DEPENDENT BIREFRINGENT OPTICAL SPATIAL FREQUENCY FILTER AND RED AND BLUE SIGNAL INTERPOLATING CIRCUIT

David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 10, 1984, Ser. No. 649,000
Int. Cl.[4] H04N *9/077, 9/07*
U.S. Cl. 358—44 **7 Claims**





2. An electronic color camera comprising:

(a) a solid-state color image sensor having red, green and blue image sensing elements for producing red., green and blue image signals, the red and blue image sensing elements each being located between neighboring pairs of green image sensing elements;

(b) color dependent birefringent optical spatial frequency filter means for deflecting red and blue light from portions of an image sampled by the green image sensing elements onto the red or blue image sensing elements located between them, and for substantially not deflecting the green light; and

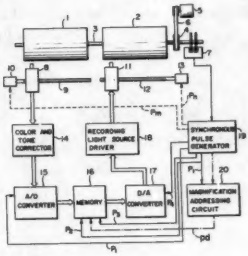
(c) signal processing means, including means for producing a signal representing red and blue hue component values at respective red and blue sampling locations, means for interpolating the red and blue hue component values, and means for producing interpolated red and blue signal values as a function of the interpolated hue component values and green signal values.

4,605,957

MACHINE AND METHOD FOR PICTURE REPRODUCTION WITH STEADILY VARIABLE REPRODUCTION SCALE

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 170,127, Jul. 18, 1980, abandoned, which is a continuation of Ser. No. 933,714, Aug. 15, 1978, abandoned. This application Sep. 13, 1982, Ser. No. 417,437
Claims priority, application Japan, Aug. 25, 1977, 52-101976; Nov. 1, 1977, 52-131366
Int. Cl.[4] H04M *1/06*
U.S. Cl. 358—78 **5 Claims**



1. A picture reproducing method of variable enlargement scale, comprising:

successively scanning linear samples of an original picture to obtain analog input picture signals;

correcting color and tone of the analog input picture signals;

converting the analog input picture signals to digital input signals in an analog-digital converter in synchronization with first sampling pulses;

writing the digital input signals into a memory in synchronization with second sampling pulses, into memory locations with consecutively increasing addresses;

reading out the digital input signals stored in the memory as digital output signals in synchronization with third sampling pulses, addressing the successive memory locations by using addressing signals which repeatedly address selected memory locations for at least two periods of said third sampling pulse during each scan so that the values stored in such selected memory location are read out at least twice as digital output signals, such selected memory location being every "n"th memory address where "n" is an integer corresponding to the scale of picture enlargement;

converting the digital output signals into analog output picture signals in a digital-analog converter in synchronization with fourth sampling pulses;

and recording a reproduction of the original picture from the analog output signals, said first, second, third and fourth sampling pulses being provided at the same frequency.

4,605,958

METHOD AND APPARATUS FOR DETECTING THE CHANNEL TO WHICH AN ELECTRONIC RECEIVER SYSTEM IS TUNED

Patrick R. Machnik, Roseville; Bruce L. Petersen, Mounds View; Robert G. Schultz, New Brighton; Jerry T. Thatcher, Shoreview, all of Minn., and Roscella A. Whiting, Lanham, Md., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 14, 1983, Ser. No. 486,003
Int. Cl.[4] H04N *17/04;* **H04H** *9/00*
U.S. Cl. 358—84 **56 Claims**

9. Apparatus for detecting which of a plurality of radio frequency carriers available over a radio frequency communi-

cations medium has been selected for reception by a communications system, said system including a selector, for selecting one of said carriers and a receiver, said apparatus comprising:

a multifrequency input adapted for coupling with said medium;

a multifrequency output coupled to said multifrequency input and adapted for coupling with said selector;

a single frequency input adapted for coupling with said selector;

a single frequency output adapted for coupling with said receiver; and

means, interconnecting said single frequency input and said single frequency output, for detecting the carrier frequency selected by said selector.

14. Apparatus for detecting which of a plurality of channels available over a medium has been selected for reception by a communications system, said system including a selector, coupled to said medium, for selecting one of said channels, and having an output, and a receiver for receiving a channel selected by said selector, said apparatus comprising:

means, coupling said selector to said receiver, for intermittently monitoring said selector output; and

means for uncoupling said receiver from said selector during said intermittent monitoring.

45. A method of detecting which of a plurality of carriers has been selected for reception by a television system, said system including a selector for selecting one of said carriers, said method comprising the steps of:

counting the number of horizontal sync pulses between consecutive vertical sync pulses in television signals from said selector;

determining from said counting step when said television signals are acceptable; and

only after said determination is positive, detecting which of said carriers has been selected by said selector.

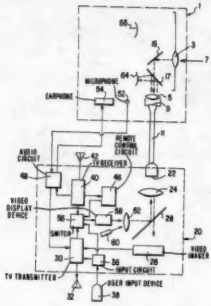
4,605,959

PORTABLE COMMUNICATIONS TERMINAL

Michael E. Colbaugh, Trafford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1984, Ser. No. 643,503
Int. Cl.[4] H04N 7/14
U.S. Cl. 358—93 **11 Claims**

1. Portable communication terminal composed of a headset to be worn on the head of a user and a portable transceiver set to be carried by the user, said terminal comprising: non-electrical optical fiber means mounted for transmitting optical images between a location at said headset and a location at said portable transceiver set; first optical means disposed at said headset for enabling an image transmitted to said location at said headset from said location at said transceiver set to be viewed by a user wearing said headset; second optical means disposed at said headset and associated with said location at said headset for causing an image of the scene in front of a user wearing said headset to be formed at said location at said transceiver set; television transmitter and receiver means at said transceiver set for transmitting a video signal and for forming a video display from signals conducted to said transmitter and receiver means; and third optical means at said transceiver set disposed between said transmitter and receiver means and said location at said transceiver set for supplying to said transmitter and receiver means images formed at said location at said transceiver set by light passing through said optical fiber means for conversion into a video signal, and for supplying to said location at



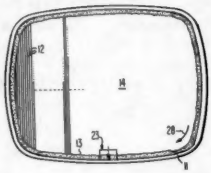
said transceiver set an image of the video display formed by said transmitter and receiver means for transmission via said optical fiber means to said location at said headset.

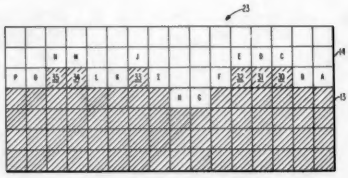
4,605,960

METHOD FOR AVOIDING IDENTIFYING PERIMETER VARIATIONS AS BLEMISHES IN A CCD IMAGE

Edward Cohen, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 22, 1984, Ser. No. 663,699
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—106 **19 Claims**





1. A method of avoiding the identification of permissible variations in the perimeter of an image on a CCD (charge coupled device) as blemishes in the proximity of said perimeter comprising the steps of:

detecting the charge levels of perimeter identifying pixels in a sequence of pixel motions, wherein a pixel motion is the detection of adjacent pixel charge levels and wherein adjacent pixels are pixels having contiguous sides or contiguous corners, said pixel motions being taken in directions defined by a pixel direction matrix wherein the pixel being detected is surrounded by adjacent pixels whereby the detection of side adjacent pixels results in straight pixel motions and the detection of corner adjacent pixels results in diagonal pixel motions; and:

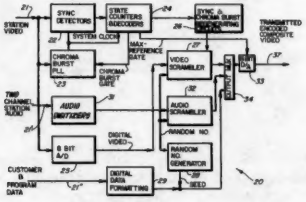
further including the step of sequentially detecting the

charge levels on a plurality of adjacent pixels and recording diagonal pixel motions as straight pixel motions where the first and the last pixel motions are diagonal in opposite directions and all intervening pixel motions are straight.

4,605,961
VIDEO TRANSMISSION SYSTEM USING TIME-WARP SCRAMBLING

Jeffrey E. Frederiksen, 603 W. Haven Dr., Arlington Heights, Ill. 60005

Filed Dec. 22, 1983, Ser. No. 565,023
Int. Cl.[4] H04N *7/167*
U.S. Cl. 358—119 **44 Claims**



1. An encoder for generating a scrambled composite video signal for secure transmission, the video signal having a plurality of video lines, each video line including a video data portion, said encoder comprising the combination of:

means for sampling the video data portion for each video line at a periodic rate and subdividing the video data portion for each video line into a plurality of segments,

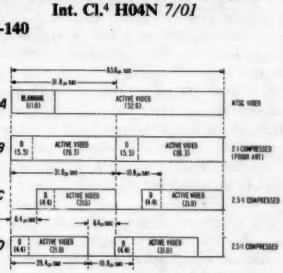
a pseudorandom number generator for generating a plurality of pseudorandom number for at least some of said video lines, each pseudorandom number having multiple bits,

video scrambling means responsive to said pseudorandom numbers for inverting the polarity of the samples in selected segments, for reversing the order of the samples in selected segments, and for reversing the order of the segments in selected segment pairs.

4,605,962
PROGRESSIVE SCAN TELEVISION SYSTEM WITH VIDEO COMPRESSION EXCEEDING DISPLAY LINE RATE

Todd J. Christopher, Indianapolis, and Russell T. Fling, Fishers, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 30, 1984, Ser. No. 676,946
Int. Cl.[4] H04N *7/01*
U.S. Cl. 358—140 **4 Claims**



1. A television system, comprising:

a source for providing a video input signal having a given line rate;

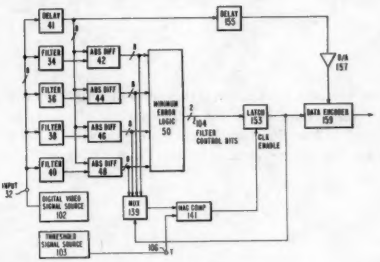
processor means coupled to said source for time compressing said video input signal by a factor K and for increasing the line rate of the time compressed signal by a different factor N, K being greater than N, to provide a processed video output signal; and

display means having a horizontal sweep rate equal to N-times said given line rate and coupled to said processor means for displaying said processed video output signal.

4,605,963
REDUCTION OF CONTROL BITS FOR ADAPTIVE SUB-NYQUIST ENCODER

Glenn A. Reitmeier, Trenton, and Curtis R. Carlson, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 15, 1983, Ser. No. 523,823
Int. Cl.[4] H04N *7/04, 7/12*
U.S. Cl. 358—141 **5 Claims**



1. A method of transmitting data divided into first and second portions, each portion comprising a plurality of bytes, said method comprising transmitting said first portion, comparing at least one byte of the remaining untransmitted second portion to a plurality of selected combinations of bytes of said first portion, determining which of said selected combinations of bytes of said first portion is the closest match to said one byte of said second portion, transmitting control bits indicative of said closest match, and updating said control bits when said control bits no longer indicates a match within a selected tolerance.

4,605,964
METHOD AND APPARATUS FOR EDITING THE OUTPUT OF A TELEVISION SET

Frederick W. Chard, 7, Graham Avenue, St. Austell, Cornwall, England

PCT No. PCT/GB82/00352, § 371 Date Aug. 9, 1983, § 102(e) Date Aug. 9, 1983, PCT Pub. No. WO83/02208, PCT Pub. Date Jun. 23, 1983
PCT Filed Dec. 15, 1982, Ser. No. 525,034
Claims priority, application United Kingdom, Dec. 19, 1981, 8138341
Int. Cl.[4] H04N *7/087, 3/24*
U.S. Cl. 358—147 **9 Claims**

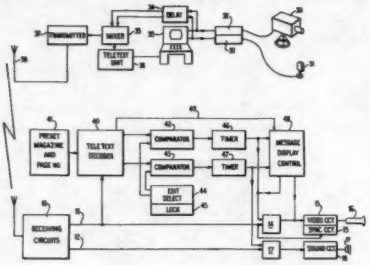
8. A controller for editing out undesired sound and visual events from a television signal where this signal includes coding individually identifying, as they occur, certain possibly-undesirable events forming part of a programme represented by the signal, the coding including an indication of the sound or visual nature of each said event; said controller comprising:

monitor means **(40)** for monitoring the television signal to identify said coding and output a corresponding coding signal,

signal processing means **(40,42,43,44)** connected to receive said coding signal and arranged to determine therefrom the time of occurrence and nature of said certain possibly-undesirable events, these latter events being events which are to be edited out, and produce inhibit signals in response thereto and

inhibit means **(14,17)** arranged to operate on said television signal in response to said inhibit signals such as to inhibit

the intelligible output from said controller of the sound portion of said television signal when the signal processing means (40,42,43,44) indicates the presence of a sound



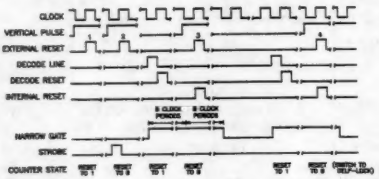
event to be edited out, and to inhibit the intelligible output from the controller of the vision portion of said television signal when the signal processing means (40,42,43,44) indicates the presence of a visual event to be edited out.

4,605,965

UNIVERSAL VERTICAL COUNTDOWN AND METHOD FOR VIDEO DISPLAY

Michael McGinn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1985, Ser. No. 730,525
Int. Cl.[4] H04N *5/04*
U.S. Cl. 358—148 **35 Claims**



1. A universal vertical countdown for initiating vertical ramp retrace in a video display comprising:

means for deriving a plurality of external reset pulses in response to an external vertical pulse train;

means for initiating said vertical ramp retrace in response to said external reset pulses;

means for measuring a frequency value of said external reset pulses in response to first and second ones thereof;

means for storing said frequency value;

means coupled to said storing means for activating a gate signal at a predetermined time in anticipation of a third one of said external reset pulses in response to said stored frequency value;

means for generating a plurality of internal reset pulses at said stored frequency value;

means for detecting an occurrence of said third one of said external reset pulses within said gate signal; and

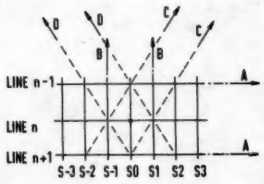
means for alternatively initiating said vertical ramp retrace in response to said internal reset pulses if said third external reset pulse occurs within said gate signal and a fourth one of said external reset pulses is coincident with one of said internal reset pulses.

4,605,966

ERROR CONCEALMENT IN DIGITAL TELEVISION SIGNALS

Mark C. Collins, Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,324
Claims priority, application United Kingdom, May 14, 1982, 8214086
Int. Cl.[4] H04N *5/14, 5/21*
U.S. Cl. 358—160 **10 Claims**



1. A method of concealing errors in a digital television signal, which television signal comprises a plurality of component sample signals corresponding respectively to sample positions along a horizontal scan line of a television picture made up of a plurality of such lines, the method comprising, in respect of each said sample signal which is in error:

calculating a first concealment accuracy by calculating from available sample signals disposed along a first direction of said television picture and to one side of the sample position of said error sample signal the expected value of a first sample signal adjacent to said sample position of said error sample signal, checking said expected value of said first sample signal against the actual value of said first sample signal, and suppressing said first concealment accuracy if its calculation involves the use of any error sample signal;

calculating a second concealment accuracy by calculating from available sample signals disposed along said first direction of said television picture and to the other side of said sample position of said error sample signal the expected value of a second sample signal adjacent to said sample position of said error sample signal, checking said expected value of said second sample signal against the actual value of said second sample signal, and suppressing said second concealment accuracy if its calculation involves the use of any error sample signal;

calculating a third concealment accuracy as the sum of said first and second concealment accuracies when neither said first nor said second concealment accuracy is suppressed;

calculating a fourth concealment accuracy by calculating from available sample signals disposed along a second direction different from said first direction of said television picture and to one side of said sample position of said error sample signal the expected value of a third sample signal adjacent to said sample position of said error sample signal, checking said expected value of said third sample signal against the actual value of said third sample signal, and suppressing said fourth concealment accuracy if its calculation involves the use of any error sample signal;

calculating a fifth concealment accuracy by calculating from available sample signals disposed along said second direction of said television picture and to the other side of said position of said error sample signal the expected value of a fourth sample signal adjacent to said sample position of said error sample signal, checking said expected value of said fourth sample signal against the actual value of said fourth sample signal, and suppressing said fifth concealment accuracy if its calculation involves the use of any error sample signal;

calculating a sixth concealment accuracy as the sum of said fourth and fifth concealment accuracies when neither said fourth nor said fifth concealment accuracy is suppressed;

selecting from the available said concealment accuracies a preferred direction of said television picture for correcting said error sample signal;

calculating a correction value for said error sample signal using available sample signals disposed along said preferred direction; and

substituting said correction value for said error sample signal so as to conceal the error.

4,605,967

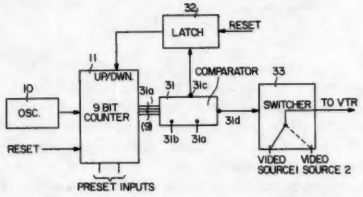
DIGITAL VIDEO SPECIAL EFFECTS GENERATOR

H. George Pires, 20 Surrey La., Parlin, N.J. 08859

Filed Mar. 12, 1984, Ser. No. 588,392

Int. Cl.[4] H04N *5/262*

U.S. Cl. 358—183 **7 Claims**



1. Apparatus for selectively connecting a first or a second television signal source to a video system carrying out horizontal and vertical scans at horizontal and vertical scan rates, respectively, comprising in combination

means for generating digital counting signals in a predetermined time relationship to a selected one of said scans and at a predetermined multiple of the associated one of said scan rates, and including first and second digital counting signal generating means respectively preset in synchronism with said horizontal and vertical scans,

keying signal generator means connected to said counting signal generator means for generating a first or second keying signal in response to predetermined one of said counting signals, and including generator means for comparing said counting signals to a predetermined count, and generating said first or said second keying signal when said counting signals signify a count greater than, or less than said predetermined count, respectively,

digital multiplier means having a first and second input connected to receive said counting signals, and including first and second multiplier means respectively having inputs connected to said first and second digital counting signal generating means, and first and second output terminals furnishing vertical and horizontal parabolic signals, respectively,

switch means for connecting said first or second television signal source to said video system in response to said first or second keying signal, respectively, and

adder means connected to said first and second multiplier means for adding said vertical to said horizontal parabolic signal, thereby creating an adder output signal for application to said keying signal generating means.

4,605,968

DIRECT BROADCASTING SATELLITE RECEIVER

Toshihide Hayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,614

Claims priority, application Japan, Jul. 21, 1983, 58-113542[U]

Int. Cl.[4] H04N *5/50, 5/445*

U.S. Cl. 358—188 **6 Claims**

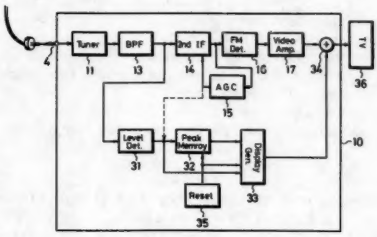
1. A direct broadcasting satellite receiver for receiving a broadcasting wave transmitted from a stationary artificial satellite through antenna means installed outdoors comprising:

a signal input terminal to which a signal from said antenna means is supplied through a signal cable;

a demodulating circuit for demodulating the signal fed in at said signal input terminal into a television signal;

a level detecting circuit for detecting a signal level of said signal fed in at said signal input terminal and producing an output signal representing said signal level;

a peak value holding circuit for holding the maximum value of the output level of said level detecting circuit output



signal and producing a signal representing said maximum value;

a display generator for developing video signals responsive to an output signal from said level detecting circuit and said signal representing said maximum value from said peak value holding circuit; and

signal superimposing means for superimposing said video signals from said display generator upon said television signal from said demodulating circuit, whereby the input signal level at said input terminal and a maximum value of the output level from the level detecting circuit are displayed on a television picture screen.

4,605,969

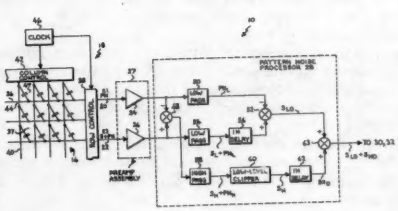
VIDEO PATTERN NOISE PROCESSOR

Wayne T. Green, Mexico, N.Y., assignor to General Electric Company, Charlottesville, Va.

Filed Aug. 21, 1984, Ser. No. 643,317

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213 **14 Claims**



1. A pattern noise processor for cancelling pattern noise in a video signal from a charge-injection device, said charge-injection device being of a type which simultaneously reads out first and second signals, said first and second signals respectively containing contents of corresponding charge storage locations in first and second rows of said charge-injection device, said charge storage locations in said first row containing said video signal and pattern noise, and said charge storage locations in said second row containing only pattern noise, having had any video therein erased comprising:

means for delaying one of said first and second signals for a predetermined time, said predetermined time being suffi-

cient to coincide portions of said one of said first and second signals with portions of the other of said first and second signals originating in the same storage locations of the same row;

means for differencing the delayed and undelayed signals to produce a noise-reduced signal;

means for removing a high-frequency component of said noise-reduced signal above a predetermined frequency to produce a noise-reduced, low-frequency component;

means for passing a high-frequency component of at least said first signal, said high-frequency component including all frequencies above said predetermined frequency;

means for clipping portions of said high-frequency component having positive and negative amplitudes less than a predetermined value to produce a clipped high-frequency component;

means for delaying said high-frequency component for said predetermined time to produce a clipped delayed high-frequency component; and

means for adding said clipped high-frequency component and said noise-reduced, low-frequency component.

4,605,970

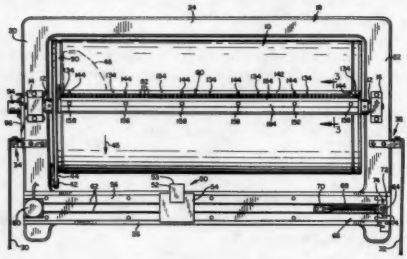
METHOD AND APPARATUS FOR CALIBRATING AN OPTICAL DOCUMENT DIGITIZER

Jeffrey A. Hawkins, Lake Oswego, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 1, 1984, Ser. No. 657,285

Int. Cl.[4] H04N *1/36*

U.S. Cl. 358—265 **16 Claims**



1. A calibration apparatus for an optical documents digitizer having a drum which is rotatable about an axis and an optical array of photo detectors for scanning the drum, the optical array having a scanning width comprising:

an elongated strip;

the strip having an optical pattern of contrasting light and dark areas on one surface thereof, the pattern including plural discrete blocks, each of the blocks having first and second orthogonal edges, the first edges being positioned along a scanning reference line;

the strip being adapted for mounting to the rotatable drum of the digitizing apparatus with the first edges, and thereby the scanning reference line, parallel to the axis of the drum.

4,605,971

DOCUMENT READING DEVICE

Shigeki Kimura, Ibaraki, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

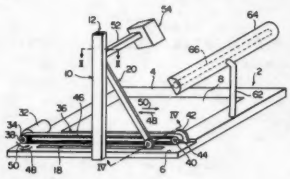
Filed Jun. 6, 1985, Ser. No. 741,894

Claims priority, application Japan, Jun. 11, 1984, 59-119420

Int. Cl.[4] H04N *1/12*

U.S. Cl. 358—285 **8 Claims**

1. A document reading device comprising a document stand having a substantially plane document placing surface on which to place a document to be read, a guide member defining a guide passage extending in a direction toward and away from the document placing surface, an oscillating member mounted such that its one end can reciprocate freely along the document placing surface in a predetermined scanning direction and in a direction opposite to it and the other end can freely reciprocate along the guide passage, a driving source for oscillating the oscillating member which is capable of moving said one end of the oscillating member at a substantially constant speed in the scanning direction, and an optical reading



means provided in the oscillating member for reading the surface of the document placed on the document placing surface, whereby while said one end of the oscillating member is moved in the scanning direction at said substantially constant speed, the optical distance between the surface of the document placed on the document placing surface and the optical reading means is maintained substantially constant, and the optical reading means scans the surface of the document.

4,605,972

IMAGE FORMING METHOD

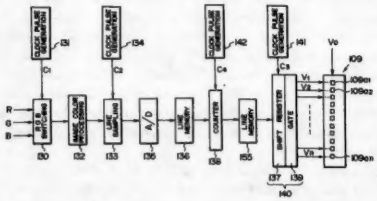
Isamu Hatanaka, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,911

Claims priority, application Japan, Sep. 5, 1983, 58-162909; Jul. 26, 1984, 59-156273

Int. Cl.[4] H04N *1/23*; G01D *15/14*; G02F *1/13*

U.S. Cl. 358—302 **9 Claims**



1. An image forming method in which a liquid crystal shutter array operable as a light valve is positioned between a photosensitive material and a light source, and light emitted by said light source to said photosensitive material is controlled by driving each liquid crystal shutter portion constituting a picture element of said liquid crystal shutter array, thereby conducting imagewise exposure of said photosensitive material to the light, wherein the improvement comprises controlling the drive of said liquid crystal shutter portion by supplying to said liquid crystal shutter portion driving pulses having a pulse width shorter than the response time of the liquid crystal and by changing the effective duration of said driving pulses as a function of image density information of an image signal, and using a photosensitive material which can express a half tone as said photosensitive material.

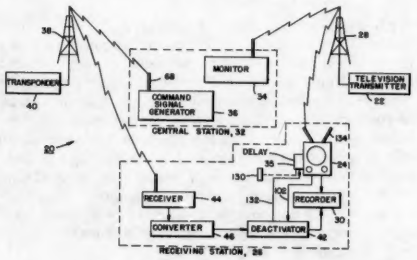
4,605,973
SYSTEM, APPARATUS AND METHOD FOR RECORDING AND EDITING BROADCAST TRANSMISSIONS

Henry Von Kohorn, 22 Perkins Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 410,464, Aug. 23, 1982, Pat. No. 4,520,404. This application Mar. 29, 1985, Ser. No. 717,828

Int. Cl.[4] H04N *5/76;* **H04H** *1/00*

U.S. Cl. 358—335 **41 Claims**



1. A remote editing system for broadcast transmissions comprising:

monitoring system means for monitoring broadcast transmissions from a plurality of sources of such transmissions to determine the program content of each of said broadcast transmissions;

means for transmitting an editorial message based on said program content of individual ones of said broadcast transmissions to subscriber stations of said system;

first receiving means in each of said subscriber stations for receiving said broadcast transmissions, said first receiving means including means for presentation of data of the broadcast transmissions;

second receiving means in each of said subscriber stations for receiving said message;

means coupled between said first and said second receiving means for operating said first receiving means in accordance with the message received by said second receiving means; and wherein

said operating means includes means for delaying a presentation of data of said broadcast transmission relative to an occurrence of said editorial message to permit a monitoring of the broadcast transmissions by said monitoring means prior to the presentation of data of the broadcast transmissions at a subscriber station.

4,605,974
MAGNETIC RECORDING AND REPRODUCING APPARATUS

Atsuo Ochi, Moriguchi; Akio Hashima, Tsuzuki, and Masao Tomita, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 21, 1983, Ser. No. 555,002

Claims priority, application Japan, Nov. 24, 1982, 57-206694; Nov. 24, 1982, 57-206695

Int. Cl.[4] G11B *15/12, 15/14*

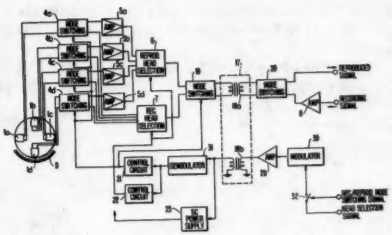
U.S. Cl. 360—62 **7 Claims**

1. A magnetic recording/reproducing apparatus having an oscillator for generating a carrier signal and a modulating means for modulating said carrier signal by a recording/reproducing mode switching signal and a head selection signal so as to thereby obtain a modulated signal; and a cylinder unit comprising a rotor drum, a stator drum and a rotary transformer for transmitting signals between the rotor and stator drums, wherein said rotary transformer has a first channel for transmitting video signals and a second channel for transmitting said modulated signal from said stator drum to said rotor drum and wherein said rotor drum comprises:

a plurality of rotary magnetic heads for recording and reproducing video signals;

an amplifying means for amplifying signals reproduced by said plurality of rotary magnetic heads;

a recording/reproducing mode switching means for coupling said plurality of rotary magnetic heads to said amplifying means and for coupling said amplifying means to said first channel of said rotary transformer during a reproducing mode, and coupling said first channel of said rotary transformer to said plurality of rotary magnetic heads and isolating said amplifying means from said plurality of rotary magnetic heads during a recording mode;



a head selecting means for selecting one rotary magnetic head from among said plurality of rotary magnetic heads;

a control means for obtaining said recording/reproducing mode switching signal and said head selection signal for controlling said mode switching means and said head selecting means, respectively, from said carrier signal of said modulated signal transmitted from said stator drum through said second channel of said rotary transformer; and

a power source for prodcuing a DC voltage for energizing all of said means on said rotor drum from said modulated signal transmitted from said stator drum through said second channel of said rotary transformer.

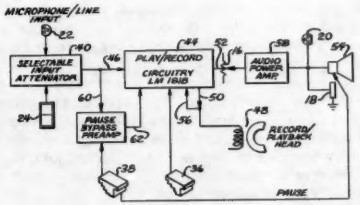
4,605,975
PORTABLE NEWS-GATHERING CASSETTE RECORDER HAVING MICROPHONE TALK-OVER CAPABILITY

Franklin D. Beaman, 835 Forest Ave., Wilmette, Ill. 60091

Filed Jun. 27, 1983, Ser. No. 507,971

Int. Cl.[4] G11B *15/12*

U.S. Cl. 360—62 **2 Claims**



1. In a portable battery-operated tape recorder for newsgathering and reporting or the like having a tape transport; tape recorder control means including means for selecting a record mode; a playback mode, and a pause mode; an audio input connection operatively connected to a record amplifier means including record tape head means when the record mode is selected, playback audio output means operatively connected to a playback amplifier means including playback

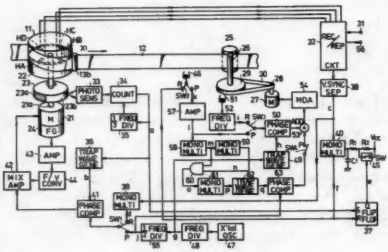
tape head means when the play mode is selected; the improvement comprising selectable means for operatively interconnecting the audio input connection and the audio output means when the tape recorder is in the play mode whereby audio may be routed to the output means from the input connection; wherein the selectable means for operatively interconnecting the input connection and output connection includes means operatively connected to the pause mode selecting means wherein said interconnecting means is enabled only in the pause mode.

4,605,976

RECORDING AND/OR REPRODUCING SYSTEM FOR A 4-HEAD TYPE RECORDING AND/OR REPRODUCING APPARATUS

Takeyoshi Ito, and Masahiko Tsuruta, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 22, 1984, Ser. No. 612,690
Claims priority, application Japan, May 24, 1983, 58-91372
Int. Cl.[4] G11B *21/04*
U.S. Cl. 360—70 **7 Claims**



1. A recording and/or reproducing system for a 4-head type recording and/or reproducing apparatus, said recording and/or reproducing apparatus comprising a rotary body having an outer peripheral surface to which a magnetic tape is wrapped around over an angular range which is slightly greater than 270°, a first motor for rotating said rotary body, four magnetic heads for successively recording and/or reproducing essentially one field of a video signal on and/or from one track on said magnetic tape, said four magnetic heads being made up of first and second pairs of magnetic heads, said first pair of magnetic heads having gaps of the same azimuth angle and being mounted at diametrical positions on said rotary body, said second pair of magnetic heads having gaps of the same azimuth angle which is different from the azimuth angle of the gaps of said first pair of magnetic heads, and being mounted at diametrical positions on said rotary body with an angular separation of 90° from the respective magnetic heads of said first pair, a capstan for moving said magnetic tape, a second motor for rotating said capstan, and a control head for recording and/or reproducing a control signal on said magnetic tape, said recording and/or reproducing system comprising:

first rotation detecting means for detecting a rotation of said rotary body which is rotated by said first motor, and for producing a detection signal in synchronism with a rotational phase of said rotary body;

frequency dividing means for frequency-dividing the output detection signal of said first rotation detecting means so that a frequency thereof becomes equal to ½ a field frequency of said video signal;

separating means for separating a vertical synchronizing signal from said video signal;

control and head discriminating signals generating means supplied with an output frequency divided signal from said frequency dividing means and the separated vertical synchronizing signal from said separating means, for generating a control signal in phase with said vertical synchronizing signal and a head discriminating signal having a period of four fields, said control signal and said head discriminating signal generated from said control and head discriminating signals generating means being supplied to said control head to be recorded on said magnetic tape and be reproduced from said magnetic tape;

second rotation detecting means for detecting a rotation of said capstan which is rotated by said second motor, and for producing a detection signal;

oscillator means for producing a signal having a constant frequency;

first phase comparing means for comparing the phase of the output detection signal of said second rotation detecting means and the phase of an output signal of said oscillator means during a recording mode of said recording and/or reproducing apparatus in which the video signal successively recorded on said magnetic tape by said magnetic heads, and for comparing the phase of a control signal which is reproduced from said magnetic tape by said control head and the phase of the output signal of said oscillator means during a reproducing mode of said recording and/or reproducing apparatus in which the video signal is successively reproduced from said magnetic tape by said magnetic heads;

obtaining means for obtaining said head discriminating signal from a signal which is reproduced from said magnetic tape by said control head;

second phase comparing means for comparing the phase of said head discriminating signal from said obtaining means and the phase of the output signal of said oscillator means having the period of four fields;

first rotation controlling means for applying to said second motor an output signal of said first phase comparing means during the recording mode, and for applying to said second motor an added signal obtained by adding the output signal of said first phase comparing means and an output signal of said second phase comparing means during the reproducing mode, so as to control the rotation of said second motor;

third phase comparing means for comparing the phase of the output signal of said frequency dividing means and the phase of a signal obtained from the separated vertical synchronizing signal during the recording mode, and for comparing the phase of a signal from said frequency dividing means and the phase of the output signal of said oscillator means during the reproducing mode; and

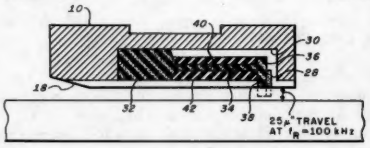
second rotation controlling means for applying an output signal of said third phase comparing means to said first motor, so as to control the rotation of said first motor.

4,605,977

AIR BEARING HEAD DISPLACEMENT SENSOR AND POSITIONER

Hugh B. Matthews, Boxboro, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,365
Int. Cl.[4] G11B *21/20, 5/60*
U.S. Cl. 360—103 **13 Claims**



1. A suspension system for a flying head, comprising:

(a) slider means for supporting a magnetic transducer, having an air bearing surface for providing a running clearance above a moving magnetic medium, said surface fur-

ther comprised of respective leading and trailing ends relative to motion of a data track and a plurality of rails extending longitudinally between said ends defining a channel therein,

(b) means for displacing said magnetic transducer coupled to said slider means for maintaining said transducer at a predetermined height above said medium,

(c) displacement driving means, responsive to a correction signal, for providing energization of said means for displacing said magnetic transducer,

(d) said means for displacing said magnetic transducer further comprised of a nonmetallic beam disposed in said channel, having a proximal edge affixed to said leading end and a cantilevered distal edge, including flexure means disposed therebetween and a portion therebetween comprised of piezoelectric material, for supporting said magnetic transducer at said distal edge, and

(e) proximity sensor means coupled to said beam for capacitively sensing the displacement of said distal edge of said beam from said medium, integrally disposed upon said edge.

4,605,978

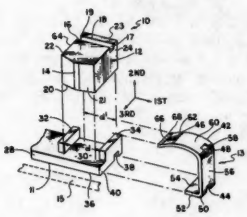
CLIP SYSTEM FOR IMMOVEABLY MOUNTING A MAGNETIC HEAD ON A SUPPORT

Mark Zeavin, 27 E. Las Flores Dr., Altadena, Calif. 91001

Filed Nov. 23, 1984, Ser. No. 674,214

Int. Cl.[4] G11B *5/50, 21/16;* **A41F** *1/00;* **B42F** *1/08*

U.S. Cl. 360—104 **26 Claims**



26. A magnetic head mounting and registration system for positioning the head against a magnetic recording surface comprising:

a support member having a top support surface, a bottom support surface opposite the top support surface, an outer edge defining a connecting surface between the top support surface and the bottom support surface, a first registration flange on the top support surface, extending away from the top support surface, and a second registration flange on the top surface, spaced a first distance from the first registration flange and extending away from the top support surface, the second registration flange being nearer the outer edge than the first registration flange, the support having an index notch having a first width in the corner region between the outer edge and the bottom support surface;

a head having a bottom head surface, a top head surface opposite the bottom head surface, a front head surface connecting the top and bottom head surfaces and having a magnetic contact area extending between the top and bottom head surfaces, a first side surface and a second side surface spaced from the first side surface a second distance substantially the same but very slightly smaller than the first distance for enabling the head to be positioned between the first and second registration flanges with the bottom head surface adjacent the top surface, for inhibiting side-to-side movement of the head between the first and second registration flanges, the head further having a first index cavity and a second index cavity in the top head surface, each cavity having a second width; and

a C-shaped clip having a base-portion, an edge portion, a first bend connecting the base portion to the edge portion, an arch portion, a second bend connecting the arch portion to the edge portion remote from the first bend, a lip portion, a third bend connecting the lip portion to the arch portion remote from the second bend, a notch tang having a third width near the first bend, a first tang, having a fourth width, near the second bend and a second tang having a fifth width near the third bend, the clip being dimensioned so that the base portion presses up against the bottom support surface and the arch portion presses down against the top head surface to hold the head with the bottom head surface immoveable pressed against the top support surface, the third width being substantially the same as the first width whereby the notch tang extends into and fits tightly in the index notch, the second, fourth and fifth widths being substantially the same whereby the first and second tangs fit tightly in the first and second index cavities, respectively, the arch portion being sized so that the third bend fits over the corner region between the top head surface and the first side surface, the notch tang and the first and second tangs holding the head immoveable against movement parallel to the registration flanges, the notch tang and first and second tangs positioned relative to each other so as to position the head relative to the support in a predefined position whereby the contact area contacts the magnetic recording surface.

4,605,979

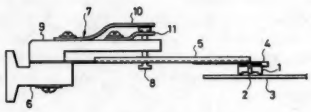
LOAD/UNLOAD SUSPENSION DEVICE FOR A MAGNETIC DISC APPARATUS

Yohichi Inoue; Katsuyuki Tanaka; Yoshinori Takeuchui; Isao Koromegawa, all of Ibaraki; Yuzoo Yamaguchi, Tsuchiura, and Yokuo Saitoh, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,256

Int. Cl.[4] G11B *5/54, 21/22, 5/48, 21/16*

U.S. Cl. 360—105 **4 Claims**



1. A load/unload suspension device for a magnetic disc apparatus comprising, a load arm, a magnetic head support supported by the load arm, a magnetic head section on the magnetic head support, a resilient member acting on the load arm and thereby on said magnetic head support to apply thereto a force acting in the direction of the magnetic disc, and an electrically heated means comprised of a shape memory alloy means for acting against the force applied by said resilient member during unloading, said shape memory alloy means constituted of a thermo-elastic, martensitic Ti-Ni alloy, such that, when the means is electrically heated up to a temperature equal to or above the transformation point, the alloy changes to an austenitic phase, thereby changing the shape of the shape alloy memory means to lift the magnetic head from the magnetic disc and to develop a driving force which is greater than the counteracting force of the resilient member.

4,605,980

INTEGRATED CIRCUIT HIGH VOLTAGE PROTECTION

Marc D. Hartranft, Scotts Valley, and Keith A. Garrett, San Jose, both of Calif., assignors to Zilog, Inc. Campbell, Calif.

Filed Mar. 2, 1984, Ser. No. 585,407

Int. Cl.[4] H02H *3/24*

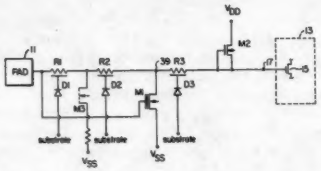
U.S. Cl. 361—56 **3 Claims**

1. As part of an integrated circuit chip formed on a semiconductor substrate, having a wire connection pad and an active

circuit to be protected from high voltage spikes introduced through said pad, a protection circuit located on said chip and disposed in an electrical current path therebetween, comprising:

a first effect transistor having a gate connected to said current path, and source and drain connections disposed between said current path and a first common point of the active circuit, said gate separated by an insulative layer a distance from said substrate such that the gate insulation remains effective during said high voltage spikes, whereby the existance of a high voltage spike causes the first transistor to turn on with a low impedance path between said current path and said first common point and thus limit the voltage in said current path,

a first resistance provided in said current path between said pad and said first field effect transistor, said gate of said



first transistor being connected on the pad side of said first resistance,

a punch through semiconductor device connected between said current path intermediate of said first resistance and said first common point, thereby to provide a second low impedance path between said current path and said first common point for high voltage spikes, and

a second field effect transistor having a gate connected to said current path at an intermediate location between the first transistor and the active circuit, and source and drain connections disposed between said current path at said intermediate location and a second common point of the active circuit, said gate being separated by an insulative layer a distance from said substrate such that the gate insulation would irreversibly break down during said high voltage spikes but is protected therefrom by said first field effect transistor.

4,605,981

INDUSTRIAL OR DOMESTIC OVERVOLTAGE PROTECTIVE DEVICE

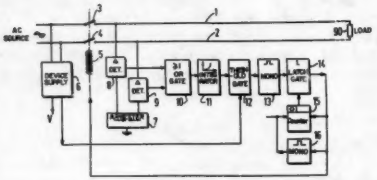
Jean-Marie Huvet, Rilly La Montagne, and Gerard J. Serrie, Jonchery Sur Vesle, both of France, assignors to Claude, S.A., Puteaux, France

Filed Jul. 10, 1984, Ser. No. 629,308

Claims priority, application France, Jul. 13, 1983, 83 11681

Int. Cl.⁴ H02H *9/04*

U.S. Cl. 361—91 **7 Claims**



1. An industrial or domestic overvoltage protective device for disconnecting a load (**90**) and a corresponding protective module (**7**) from both conductors (**1, 2**) of a power line when said protective module (**7**) is not able to dissipate all the overvoltage energy without destructive effect, characterized in that it includes in combination:

a power supply circuit (**6**) connected upstream to the power line;

two detectors of overvoltage (**8, 9**) each connected downstream between a respective one of the power line conductors (**1, 2**) and a respective input of said protective module (**7**);

one OR-gate (**10**) having its inputs connected to the outputs of each of said detectors (**8, 9**);

a threshold gate (**12**) having one input coupled to the OR-gate output (**10**);

a first monostable trigger (**13**) having a first time constant, to which is applied the output signal of said threshold gate (**12**);

a first latch gate (**14**) to which is applied the output signal of said first monostable trigger (**13**), and having an output connected to means (**5**) for controlling the state of a bipolar insulating device (**3, 4**) located in series in both power line conductors (**1, 2**) between the downstream detector connection to the power line and the upstream connection to the power line of the power supply circuit (**6**).

4,605,982

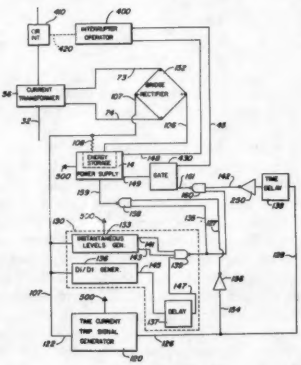
CONTROL CIRCUIT FOR A CIRCUIT INTERRUPTER

Robert H. Harner, Park Ridge, and Joseph W. Ruta, Elmhurst, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Continuation-in-part of Ser. No. 506,942, Jun. 22, 1983, Pat. No. 4,571,658. This application Nov. 5, 1984, Ser. No. 668,110

Int. Cl.⁴ H02H *3/44, 3/08*

U.S. Cl. 361—94 **16 Claims**



11. A control circuit for generating a trip signal in response to current above a selected threshold in an alternating-current line, said control circuit comprising:

trip signal generating means for generating a trip signal when the rate of change of the current in the line exceeds a selected rate, said trip signal generating means comprising means for delaying generation of said trip signal until the rate of change of the current independent of the current magnitude continuously exceeds the selected rate throughout a predetermined time interval, the time interval being measured from the time the rate of change of the current exceeds the selected rate.

4,605,983

DRIVE CIRCUITS

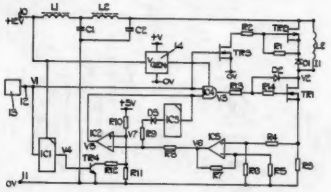
Ian J. Harvey, Cricklade, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Dec. 19, 1984, Ser. No. 683,511

Claims priority, application United Kingdom, Jan. 31, 1984, 8402470

Int. Cl.[4] H01H 47/32; F02D 41/30

U.S. Cl. 361—154 8 Claims



1. A drive circuit for controlling the flow of electric current in the solenoid of an electromagnetic device in response to a control signal comprising first and second terminals for connection to a DC supply, one end of said solenoid being connected in use to one of said supply terminals, a first semiconductor switch having a solenoid current path connected in series in use, between the other end of said solenoid and one end of a current sensing resistor the other end of which is connected to the other supply terminal, a current recirculation loop including a diode and a second semiconductor switch connected in parallel with said solenoid, a control signal input terminal, driving means for said second semiconductor switch, said driving means being connected to said control signal input terminal whereby when the control signal is supplied to said input terminal the current recirculation loop will be rendered operative, a comparator, first means for applying a voltage signal to one input terminal of the comparator dependent upon the magnitude of the current flow in said sensing resistor, second means for generating a reference voltage which is applied to the second input terminal of the comparator, an AND gate the output of which is utilized to render the solenoid current path of the first semiconductor switch conductive, one input of the AND gate being connected to said control signal input terminal and the other input to the output of said comparator, first monostable circuit means responsive to said control signal the output of the circuit acting to modify the reference voltage supplied to the comparator after a predetermined time following receipt of the control signal, and a second monostable circuit means responsive to the output of the comparator the output of the circuit being applied to the one input of the comparator, whereby the current flow in the solenoid will rise to a peak value as determined by a first value of the reference voltage and thereafter will switch at a frequency determined by said second monostable circuit means, the current flow in the solenoid being reduced to a peak holding value after said predetermined time, the peak holding value of the current being determined by a second value of the reference voltage, the current thereafter being switched by the action of said second monostable circuit means.

4,605,984

STATIC CONTROL STRAP

Robert A. Fiedler, Santa Ana, Calif., assignor to Beckman Industrial Corporation, Fulerton, Calif.

Filed Aug. 5, 1985, Ser. No. 762,249

Int. Cl.[4] H05F 3/02

U.S. Cl. 361—220 6 Claims

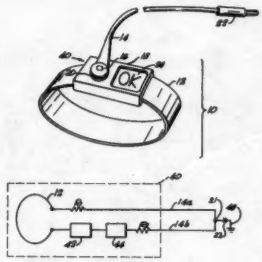
1. A grounding device for connecting the body of a person to a ground point to drain off electrostatic charge from the body of said person comprising:

a wrist band adapted to be worn on a bare wrist of a person using said grounding device, said wrist band being electrically conductive and adapted for making electrical contact with the body of said person;

a connecting cable having first and second insulated wires;

one end of said first and second wires being electrically connected at a common ground point;

an end of said first wire opposite said one end being electrically connected to said wrist band;



signal generating means coupled with indicating means electrically connecting said wrist band to said ground point through said second wire, said first wire serving as a return path for signals from said generating means so that electrical continuity between said wrist band and said ground point is indicated by receipt of said signals by said indicating means.

4,605,985

SENSOR ARRAY

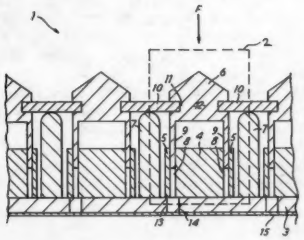
Jeremy D. M. Watson, Burgess Hill, England, assignor to Emi Limited, Hayes, England

Filed Sep. 6, 1985, Ser. No. 773,134

Claims priority, application United Kingdom, Sep. 14, 1984, 8423315

Int. Cl.[4] H01G 7/00, 5/01

U.S. Cl. 361—283 6 Claims



1. A sensor array comprising: a plurality of sensor elements, each element having electrodes and a dielectric body which are relatively movable, from a rest position upon application of pressure to the element, such that the increase in penetration of the body between the electrodes is proportional to the amount of pressure applied; and a common resilient support connected to the elements thereby to return the electrodes or body of each of those elements to the rest position when pressure is removed from that element.

4,605,986

COOLED ELECTRICAL CIRCUIT COMPONENT, PARTICULARLY SWITCHING-TYPE SEMICONDUCTOR

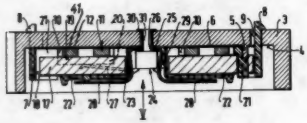
Willy Bentz, Sachsenheim; Willi Gansert, Kornwestheim; Gert Jakob, Stuttgart; Kurt Stammler, Schwieberdingen, and Christoph Walter, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,091

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409037

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—386 18 Claims



1. A pre-assemblable, heat-spike resistant electrical circuit component and cooling structure combination

wherein the electrical circuit component (11) is a static, plate-like component having a thermally conductive portion (12) and two major surfaces (19, 41) and, in operating, generates heat,

said combination having

a first, heat-transferring, base-plate, element (3) having an engagement surface (4), the component (11) being positioned with a first major surface (41) thereof against said engagement surface (4) of the base-plate heat-transferring element (3);

a spring (24) pressing the component (11) towards the engagement surface (4);

and comprising, in accordance with the invention,

a second heat-transferring element (17) positioned against the second major surface (19) of the component (11) and storing heat generated by operation of said component (11), particularly during peak operation thereof, and re-radiating said heat through said thermally conductive portion (12) of said component (11) to said base-plate element (2), thereby alleviating potentially damaging heat spikes in said component,

a resilient insulative holder (7) partially surrounding said component (11), said second heat-transferring element (17) and said spring (24), the spring (24) engaging a portion (22) of said holder (7) adjacent to the second heat-transferring element (17) and exerting pressure thereagainst, and thus pressing the second heat-transferring element (17) against the component (11), and the component (11) against the heat-transferring base-plate element (3); and

means (8, 30) securing at least said spring (24), holder (7), and base-plate (3) together as an assembly adapted for use as part of a larger electrical circuit;

said spring (24) holding the component (11) between the first (3) and second (17) heat-transferring elements and in position on said base-plate heat-transferring element (3).

4,605,987

METHOD OF CONTROLLING PRINTED CIRCUIT BOARD SOLDER FILLETS AND PRINTED CIRCUIT BOARDS INCLUDING SOLDER FILLET CONTROL PATTERNS

Dana R. Allensworth, New Canton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

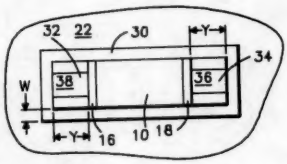
Filed Dec. 22, 1983, Ser. No. 564,131

Int. Cl.[4] H05K *1/18*

U.S. Cl. 361—403 26 Claims

1. A printed circuit board having controlled solder fillets, on said board having a number of surface mounted components locations, which components having leadless electrodes of a predetermined height z are attached by a solder process, said board comprising:

a solder resist control pattern affixed on said board around at least some of said surface mounted component locations to define the solder fillets such that the maximum distance each said solder fillet extends from said leadless electrode is not less than z; and



means for controlling solder fillet width to be substantially uniform over the maximum distance each said solder fillet extends from said leadless electrode; whereby

at least some of said components affixed to said board in said solder resist control pattern by the solder process are provided a predictable solder quality.

4,605,988

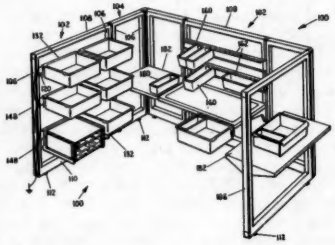
ANTI-STATIC GROUNDING ARRANGEMENT FOR WORK ENVIRONMENT SYSTEM

James H. Nienhuis, Wyoming, and Charles P. Schreiner, Saugatuck, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Feb. 25, 1983, Ser. No. 469,902

Int. Cl.[4] H02B *1/06;* H05F *3/02*

U.S. Cl. 361—429 9 Claims



1. In a work environment system for product assembly, storage, packaging and/or shipping operations, wherein the system comprises a plurality of support frames defining one or more work stations and/or storage areas and having relatively nonconductive surfaces, at least one or more work surfaces mounted to at least one support frame, a plurality of containers having conductive properties and means for removably mounting the containers to the support frames, wherein certain of the containers are removably mounted to the support frames, the improvement which comprises:

conductive interface means mounted intermediate the containers and the support frames, and providing a conductive interface therebetween;

interface grounding means interconnected to the conductive interface means and an earth ground providing a low impedance discharge path to earth ground from the containers, work surfaces and frames;

transport carts for transporting the removable containers between work stations;

means for removably suspending the removable containers on the carts;

transport interface means providing a conductive interface between the removable containers and the transport carts, and comprising metallic grounding plates conductively connected to the transport carts so that each of the containers suspended on the transport carts abuts at least one of the metallic grounding plates; and

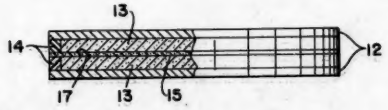
transport grounding means connected to the transport interface means and comprising at least open conductive caster in contact with ground level and mounted to each of the transport carts, and means to electrically interconnect each of the metallic grounding plates on one of the transport carts to the conductive caster on the one transport cart, wherein the grounding means continuously provides a low impedance discharge path from the transport carts and containers suspended thereon to an earth ground.

4,605,989

ELECTRODES FOR DOUBLE LAYER CAPACITORS

Allen V. Marse, Independence; Phil D. Bennett, Cleveland Hts., and Donald L. Boos, Garfield Hts., all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 12, 1985, Ser. No. 764,379
Int. Cl.[4] H01G *9/02*
U.S. Cl. 361—433 **6 Claims**



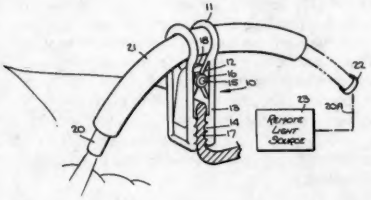
1. A double layer capacitor comprising a first and second electrode, said electrodes comprising a high surface area carbon constituent and an electrolyte, and an ionically conductive separator means between and in contact with said electrodes electronically separating said electrodes from each other, the improvement comprising providing in said electrodes at least 1%, by weight, of an inert particulate material selected from the group consisting of SiO_2, Al_2O_3, SiC and aluminum silicates to reduce the leakage current of said capacitor.

4,605,990

SURGICAL CLIP-ON LIGHT PIPE ILLUMINATION ASSEMBLY

Joseph R. Wilder, 151 W. 86th St., Apt. 9D, New York, N.Y. 10024, and Franklin G. Reick, 228 West Pl., Westwood, N.J. 07675

Continuation-in-part of Ser. No. 612,149, Jan. 21, 1984, Pat. No. 4,562,832. This application Sep. 24, 1984, Ser. No. 653,717
Int. Cl.[4] F21V *8/00*
U.S. Cl. 362—32 **7 Claims**



1. A light pipe illumination assembly to illuminate a work site, said assembly comprising:

A. a light pipe having an optical outlet at its front end and an optical inlet at its rear end, said rear end having means to couple the pipe to a light source;

B. detachable means to anchor said pipe adjacent the work site at a position in which the front section cantilevers form the anchor means into the site; and

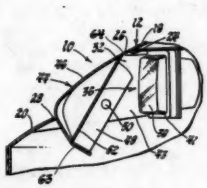
C. a bendable sleeve surrounding the front section having dead soft characteristics to render the front section orientable.

4,605,991

CONCEALED HEADLAMP

Michael S. Fylan, Lakeville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 552,410, Nov. 16, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,616
Int. Cl.[4] B60Q *11/00*
U.S. Cl. 362—65 **3 Claims**



1. In a vehicle body having a headlamp opening in a forwardly sloping vehicle body panel defined by a lower leading edge, a trailing upper edge and laterally spaced apart side edges, a headlamp assembly for illuminating a roadway and being fixedly mounted in the headlamp opening below the upper trailing edge and rearwardly above the leading edge so that the fixed headlamp defines a rear wall of the headlamp opening and a space between the fixed headlamp and the lower leading edge of the headlamp opening, the improvement comprising:

first and second vertical side walls depending respectively from the side edges of the opening to define side walls extending between the headlamp and the upper trailing edge and lower leading edge of the headlamp opening;

a closure door having a first closure surface sized to fill the headlamp opening and contoured to match the forward slope of the vehicle body panel to thereby conceal the fixed headlamp and streamline airflow over the vehicle body when the closure door is closed;

pivot means acting between the closure door and the vehicle body to enable rotary movement of the closure door about an axis transversely of the vehicle body to move the first closure surface downwardly through the space between the fixed headlamp and the lower leading edge of the headlamp opening to an open position stored within the space between the fixed headlamp and the lower leading edge of the headlamp opening to thereby open the headlamp opening and expose the fixed headlamp for illumination of the roadway; and

said closure door having a second closure surface sized and configured differently from the first closure surface to define a horizontal floor substantially filling the space between the fixed headlamp and the lower leading edge of the headlamp opening and between the first and second side walls when the closure door is rotated about the transverse axis to the open position so that the headlamp, side walls and second closure surface cooperate to define a forwardly opening air entrapping recess which streamlines airflow by capturing a stagnant column of air.

4,605,992

LIGHTING FIXTURE INSULATION

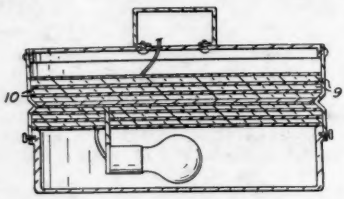
Craig H. Cover, P.O. Box 755, Newtown, Pa. 18940

Filed Jun. 12, 1985, Ser. No. 743,784

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.[4] F21S 1/14

U.S. Cl. 362—147 8 Claims



1. In a lighting fixture having a mounting pan for ceiling or wall mounting, thermal insulation affixed to said mounting pan, and a lightbulb, the improvement comprising; a batt of thermal insulation containing two or more layers bonded together, each layer being two-ply and composed of metal foil and fiberglass.

4,605,993

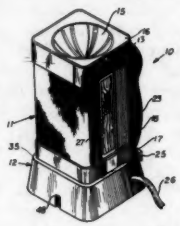
RECHARGING SPOT/FLOOD LANTERN

Francis J. Zelina, Jr., Lake City, Pa., assignor to Lighting Systems, Inc., Erie, Pa.

Filed Dec. 19, 1984, Ser. No. 683,343

Int. Cl.[4] F21L 7/00

U.S. Cl. 362—183 9 Claims



2. In combination a light having a battery and a charger,
said battery comprising a lamp having a case and a lamp circuit,
a battery,
said case comprising a support surface area,
a first terminal on said support surface area, non-circular in cross section,
an annular terminal on said support surface area,
a battery charger stand,
said stand having a charging means thereof adapted to provide a charging current to the battery,
support means on said stand adapted to have said surface area supported thereon,
first terminal on said stand,
a second terminal means on said stand spaced from said first terminal means and adapted to engage said annular terminal on said case,
said first terminal means on said stand being adapted to engage said first terminal on said surface area whereby said charging means is connected to said battery,
said surface area on said case is non-circular in cross section,
said lamp has an end member,
said surface area being on said end member,
said end member has a shape complimentary to the shape of said stand and is adapted to be supported on said stand in a plurality of relative positions of rotation,
and guide means on said stand to guide said lamp into one of said plurality of positions,
said guide means on said stand comprises a rim extending upwardly from said support means on said stand and adapted to receive said end member of said body,
said restore circuit including a switch adapted to connect said restore circuit in paralled with said charging terminals when said battery is connected to said circuit to impress a restore charge voltage on said battery for charging,
said switch being adapted to switch said restore voltage away from said battery to connect a voltage lower than said restore charging voltage

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4,605,994

FLASH LAMP

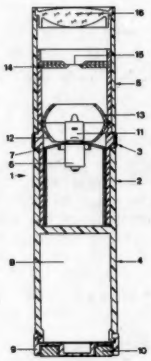
Rudolf Krieg, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,702

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412476

Int. Cl.[4] F21L 7/00

U.S. Cl. 362—202 9 Claims

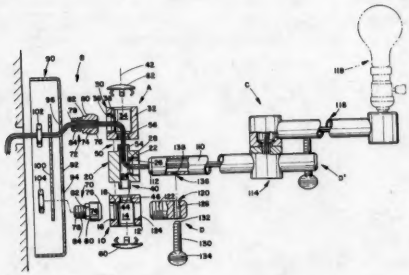


1. Flashlight (1) having
a housing (2) defining a battery chamber (8);
a halogen incandescent lamp (11) located and retained within the housing;
and a reflector-and-lens system secured to the housing, for projecting light from the halogen incandescent lamp,
said reflector-and-lens system comprising, in accordance with the invention:
a first reflector section formed by an elliptical reflector portion (12) defining a theoretical ellipse, said reflector partly surrounding the halogen incandescent lamp (11), the filament of the halogen incandescent lamp being located at one focal point of said theoretical ellipse;
a second reflector section formed by a part spherical reflector portion (13), the wide opening of which faces the elliptical reflector portion (12) and located downstream—in the direction of the light beam from the halogen incandescent lamp (11)—adjacent the elliptical reflector portion;
a spherical condenser lens (16) spaced, downstream, from the elliptical reflector portion and the part spherical reflector portion;
and a diaphragm (14) located between the part spherical reflector portion and the aspherical condenser lens (16).

4,605,995
LOCKING ARM LAMP SWIVEL

Louis D. Pike, Moreland Hills, Ohio, assignor to Pike Machine Products Company, Cleveland, Ohio

Filed Mar. 15, 1985, Ser. No. 712,187
Int. Cl.[4] F21V *21/26*
U.S. Cl. 362—287 **17 Claims**



1. A wall mountable lockable arm assembly for supporting a lighting fixture, the assembly comprising:

a first swivel member;

a second swivel member rotatably connected to the first swivel member to undergo rotating movement relative thereto about a swivel axis;

a mounting means for fixedly mounting the first swivel member to a supporting surface;

an arm mounted to the second swivel member such that the arm swivels relative to the supporting surface about the swivel axis, the arm being interconnectable with the lighting fixture;

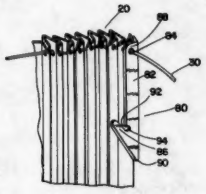
a fixed member fixedly connected with the first swivel member in a preselected relationship to the supporting surface;

an interconnecting means for selectively interconnecting the fixed member and the arm to lock the arm relative thereto.

4,605,996
KNOCK DOWN LAMP SHADE

William J. Payne, Greensburg, Pa., assignor to Crown Creative Industries, Greensburg, Pa.

Filed Mar. 12, 1985, Ser. No. 710,930
Int. Cl.[4] F21V *1/06*
U.S. Cl. 362—352 **22 Claims**



1. A knock down lamp shade that may be assembled or dis-assembled comprising:

a. a length of pleated material having a top, a bottom and two ends, said two ends being connected;

b. apertures plated near the top of the material;

c. a flexible draw ring fit within the apertures that becomes taut when the material is assembled and loose when dis-assembled;

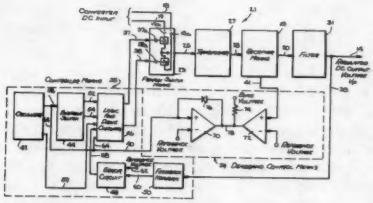
d. tensioning means for placing tension on the flexible draw ring and attached to the draw ring; and

e. a rigid support structure attached to the tensioning means so that flexible draw ring remains taut and the lamp shade stable, and said rigid support structure adapted to be connected to a conventional lamp.

4,605,997
SWITCH MODE CONVERTER AND IMPROVED DEADBAND CONTROL THEREFOR

Glenn D. Kirk, El Toro, Calif., assignor to Mai Basic Four, Inc., New York, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,476
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—16 **27 Claims**



1. A switch mode converter for providing an output voltage comprising:

primary switch means having control input means for receiving control signals, at least first and second voltage inputs and an output, the primary switch means including at least two primary switches and coupling the first and second voltage inputs to the output selectively through the primary switches in response to control signals applied to the control input means;

controller means coupled to the control input means of the primary switch means for providing control signals thereto, the controller means providing at least one turn-on control signal during first time periods to turn a first primary switch on during the first time periods, and at least one turn-on control signal during second time periods to turn a second primary switch on during the second time periods, the controller means providing a third time period between each adjacent first time period and second time period during which the no turn-on signals are provided by the controller means, the controller means providing the turn-on control signals during the first and second time periods in response to a condition of the output voltage;

means for generating a signal indicative of the state of the primary switch means; and

deadband control means coupled to receive the signal indicative of the state of the primary switch means and coupled to the controller means for causing the controller means to maintain a third time period whenever a primary switch is on during that third time period, the deadband control means comprising:

a first comparator having one input coupled to receive the signal indicative of the state of the primary switch means, and an output the level of which is responsive to the signal indicative of the state of the primary switch means, a second comparator having an input coupled to the controller means and an output coupled to the output of the first comparator, and means coupling the output of the second comparator and the input of the second comparator, such that the input to the second comparator is clamped at a level effective to cause the controller means to maintain a third time period whenever a primary switch is on during that third time period.

4,605,998

SWITCHING CONTROL CIRCUIT

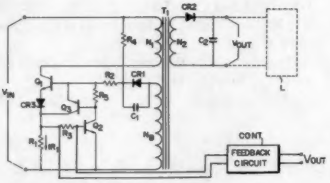
Shinya Higashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 12, 1984, Ser. No. 599,580

Claims priority, application Japan, Apr. 14, 1983, 58-55742[U]

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—19 **1 Claim**



1. A switching control circuit for use in a switching regulator of self-excited ringing choke converter type, having a voltage transformer with at least primary, secondary and base windings, and operated such that an astable power supply voltage applied to said primary winding is transferred to said secondary winding in a self-excited manner so as to rectify a voltage appearing at said secondary winding, hence a direct current voltage is generated, and the output voltage is stabilized by controlling switching of the first winding due to deviation of the output voltage, said switching control circuit comprising:

a switching power transistor which is arranged to be turned on and off in accordance with a base current derived from a voltage induced in the base winding, and which is adapted to introduce into a collector current, a current flowing through the primary winding of said voltage transformer, and to switch the collector current;

a resistor which is serially connected to said switching power transistor, and through which the collector current and the base current flow;

a feed back circuit for feeding back a control voltage, proportional to the output voltage generated in the secondary of said transformer, to the primary of said transformer;

a switching control transistor which is controlled to be turned on and off due to a voltage across said resistor, and the control voltage, and which absorbs, as a collector current thereof, a base current of said switching power transistor to turn off said switching power transistor; and

a compensation transistor which is rendered conductive by the collector current of said switching control transistor, and which supplies the base current to said resistor in the same direction as the current which has been flowing into said resistor, so as to restrain the deviation of voltage across said resistor thereby stabilizing the on state of said switching control transistor.

4,605,999

SELF-OSCILLATING HIGH FREQUENCY POWER CONVERTER

Wayne C. Bowman, Rockaway; Randhir S. Malik, Succasunna; Harold Seidel, Warren; Weyman B. Suiter, Jr., Whippany, and Norman G. Ziesse, Chester, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1985, Ser. No. 710,506

Int. Cl.⁴ H02M *3/338*

U.S. Cl. 363—19 **23 Claims**

1. A self-oscillating power converter comprising:

input means for accepting a DC voltage source.

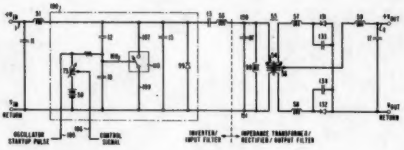
a semiconductor power switch including first and second main conduction path electrodes and a control electrode and further including at least an interelectrode capacitance between the first main conduction path electrode and the control electrode and having its first main conduction path electrode coupled to the input means,

a feedback network for sustaining oscillations in the power converter including:

the interelectrode capacitance coupling the first main conduction path electrode and the control electrode, and

a variable inductive circuit coupling the control electrode to the second main conduction path electrode,

the interelectrode capacitance and the variable inductive circuit having reactive values such that a sinusoidal voltage is generated at the control electrode causing oscillations to occur whereby the interelectrode capacitance is sufficient to be operative as an exclusive feedback path;



a tuned network connected to the first main conduction path electrode and having an inductive reactive impedance and operative at a frequency of oscillation as established by the feedback network for controlling a voltage waveform at the first main conduction path electrode to be continuing for a portion of a cycle of operation while the semiconductor power switch is nonconducting and to be discontinued while the semiconductor power switch is conducting.

4,606,000

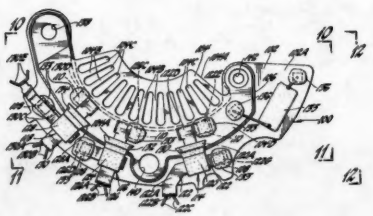
BRIDGE RECTIFIER

Roy B. Steele, Richmond; Thomas E. Kirk, Anderson; Melvin T. Robinson, Anderson, and Stephen W. Anderson, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1985, Ser. No. 716,704

Int. Cl.⁴ H02M *1/00*

U.S. Cl. 363—145 **6 Claims**



1. A bridge rectifier for an alternating current generator comprising, a first metallic heat sink that is adapted to engage an end frame of an alternating current generator when the bridge rectifier is mounted to the generator, a second metallic heat sink, an electrical insulator sandwiched between said heat sinks for electrically insulating said heat sinks from each other, a first group of semiconductor diode chips supported by said first heat sink such that they are electrically connected to and in heat transfer relationship with said first heat sink, a second group of semiconductor diode chips supported by said second heat sink such that they are electrically connected to and in heat transfer relationship with said second heat sink, a plurality of insulator blocks supported by and secured to said second heat sink each carrying an electrical connector having a plurality of arms, each said electrical connector molded to a respective insulator block, each said insulator block having a dove-

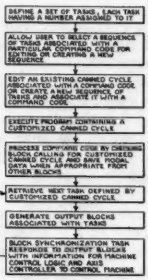
tail-shaped portion that is disposed within a complementary dovetail-shaped slot formed in said second heat sink, said connectors being adapted to be connected to the phase windings of an alternating current generator, a pair of arms of each electrical connector being electrically connected to the respective faces of a pair of semiconductor diode chips where one of the pair of diode chips is a diode chip of said first group of diode chips and the other diode chip of the pair is a diode chip of the second group of diode chips, and a coating of insulating material covering each diode chip, said coating engaging and adhering to a connector arm and surface areas of said heat sinks adjacent each chip to encapsulate a diode chip.

4,606,001

CUSTOMIZED CANNED CYCLES FOR COMPUTER NUMERICAL CONTROL SYSTEM

Werner P. Rieben, and Jill M. Willson, both of Charlottesville, Va., assignors to General Electric Company, Charlottesville, Va.

Filed May 22, 1984, Ser. No. 613,031
Int. Cl.[4] G05B *19/18*; G06F *9/46*
U.S. Cl. 364—167 **2 Claims**


DEFINE A SET OF TASKS, EACH TASK HAVING A NUMBER ASSIGNED TO IT
ALLOW USER TO SELECT A SEQUENCE OF TASKS ASSOCIATED WITH A CANNED CYCLE COMMAND CODE FOR EDITING OR CREATING A NEW SEQUENCE
EDIT AN EXISTING CANNED CYCLE ASSOCIATED WITH A COMMAND CODE OR CREATE A NEW SEQUENCE OF TASKS AND ASSOCIATE IT WITH A COMMAND CODE
EXECUTE PROGRAM CONTAINING A CUSTOMIZED CANNED CYCLE
PROCESS COMMAND CODE BY OBTAINING BLOCKS DEFINING CUSTOMIZED CANNED CYCLE AND SAVE PROCESS DATA WHEN APPROPRIATE FROM OTHER BLOCKS
RETRIEVE NEXT TASK DEFINED BY CUSTOMIZED CANNED CYCLE
GENERATE OUTPUT BLOCKS ASSOCIATED WITH TASKS
BLOCK SYNCHRONIZATION TASK RESPONDS TO OUTPUT BLOCKS WITH INFORMATION FOR MACHINE CONTROL LOGIC AND AXIS CONTROLLER TO CONTROL MACHINE

1. A method for defining and executing canned cycles in a computer numerical controlled machine comprising the steps of:

(a) defining a set of executable tasks cable of being carried out by a machine, with an assigned number for each task;

(b) entering into memory the assigned numbers representing a desired customized sequence of tasks for a particular canned cycle command code;

(c) loading a part program into the computer numerical control having a canned cycle command code corresponding to the customized sequence entered into memory;

(d) processing the canned cycle command code to retrieve the customized sequence entered into memory; and

(e) executing the desired tasks in sequence to cover the desired action in the controlled machine.

4,606,002

B-TREE STRUCTURED DATA BASE USING SPARSE ARRAY BIT MAPS TO STORE INVERTED LISTS

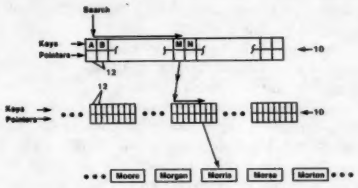
Amnon Waisman, Nashua, N.H., and Andrew M. Weiss, Paramus, N.J., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 490,814, Aug. 17, 1983, abandoned. This application Aug. 17, 1983, Ser. No. 523,527
Int. Cl.[4] G06F *15/347, 7/00, 12/04*
U.S. Cl. 364—200 **14 Claims**

6. A method of storing an inverted list of record serial numbers in a data base system including the steps of:

dividing the list of possible record serial numbers into ranges having a predetermined number of record serial numbers, each range being assigned a consecutive range value;

storing the range values for each range which contains at least one record serial number which occurs in the inverted list; and



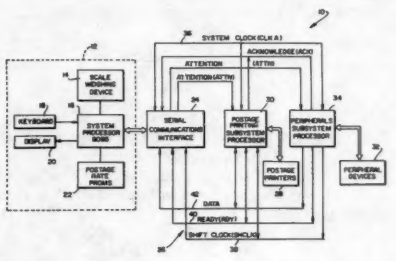
encoding the position in each stored range of each record serial number in the inverted list by means of a sparse array bit map.

4,606,003

MAILING SYSTEM PERIPHERAL INTERFACE WITH REPLACEABLE PROM FOR ACCESSING MEMORIES

Edward P. Daniels, Bridgeport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 30, 1982, Ser. No. 430,220
Int. Cl.[4] G06F *12/12*
U.S. Cl. 364—200 **5 Claims**



1. A processing system for use with a memory, having memory expansion capability to replace a first memory by a second memory having a larger storage capacity, said first memory comprising a first memory chip having a first number of address inputs and a plurality of enable inputs, and said second memory comprising a second memory chip, the input configuration of which differs only in that selected inputs of said memories, which are used as enable inputs for said first memory, are used as high order address inputs for said second memory so as to allow addressing of the additional storage capacity of said second memory, said system comprising:

(a) a first connector means for mounting a memory chip;

(b) a second connector means for mounting a ROM chip, said second connector means being operably connected to said first connector means so that selected outputs of said ROM chip are connectable to said selected inputs and at least one other output of said ROM chip being operably connectable to at least one other of said plurality of enable inputs;

(c) a plurality of address lines, a low order group of said address lines being connectable to said first number of address inputs through said first connector and the remaining ones of said address lines being connectable to the address inputs of said ROM chip through said second connector;

(d) data lines connectable to the data outputs of said memory through said first connector;

(e) control lines connectable to said memory and to said

ROM chip through said first and second connectors respectively;

(f) system processor means operatively connected to said address, data, and control lines to transfer data to and from said memory;

(g) switch means for selectively operably connecting said other outputs of said ROM chip to said remaining inputs of said plurality of enable inputs;

(h) whereby said system may operate with said first memory by inserting said first memory chip in said first connector and a ROM chip in said second connector, said ROM chip being programmed so that said selected outputs of said ROM chip always generate an enable signal on said selected inputs of said memory when said memory is addressed and a high order group of said memory is addressed and a high order group of said remaining address lines asserts a pre-selected value on said address inputs of said ROM chip and said other output of said ROM chip is selected to generate an enable signal on said remaining enable signal inputs by said remaining enable signal inputs by said switch means only when said high order group of said remaining address lines asserts said preselected value on said address inputs of said ROM chip; and,

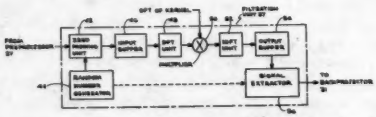
(i) whereby said system may operate with said second memory by inserting said second memory chip in said first connector, changing the setting of said switch means to change the selection of said other output of said ROM chip, and asserting a second preselected value on said high order group of said remaining address lines.

4,606,004

APPARATUS FOR REDUCTION OF FILTRATION TRUNCATION ERRORS

Carl R. Crawford, Milwaukee, and Kishore C. Acharya, West Allis, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Mar. 21, 1984, Ser. No. 591,730
Int. Cl.⁴ G06F *15/42*
U.S. Cl. 364—414 **36 Claims**



1. A device for convolving a plurality of input signals, which signals are provided by transducer means, with a common kernel by taking the inverse discrete Fourier transform (IDFT) of the product of the discrete Fourier transform (DFT) of each of said input signals with the DFT of a common kernel using a finite precision machine, wherein as a result of using the finite precision machine the resulting convolved signals have correlated noise, said device comprising:

means for obtaining the DFT of each signal forming part of said plurality of input signals;

means for obtaining a product of the DFT of each of said input signals and the DFT of said kernel;

means for taking the IDFT of said product; and

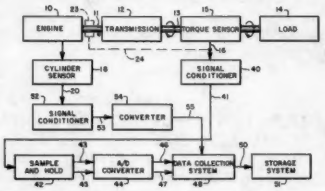
means for decorrelating the correlated noise, said decorrelating means including means for performing a rotational permutation operation on each of said input signals prior to obtaining the discrete Fourier transforms thereof, wherein the degree of rotational permutation is selectively variable for each of the input signals.

4,606,005

DRIVELINE CONTROL SYSTEM

William B. Ribbens, Ann Arbor, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 15, 1983, Ser. No. 466,745
Int. Cl.⁴ G05D *17/02;* B60K *41/04;* G06F *15/20*
U.S. Cl. 364—431.01 **11 Claims**



2. In a system for regulating torque transfer through a driveline to a load, which driveline includes an engine unit and a transmission unit, at least one of which units is adjustable to vary the torque transferred to the load, a control system comprising:

torque sensing means coupled to the driveline to provide a torque information signal related to a component of driveline torque, for example, indicated torque;

signal processing means, coupled to the torque sensor, for providing a control signal which varies as a function of torque non-uniformity, including circuit means for providing signals denoting the maximum and minimum amplitudes of the torque information signal, and means for using the torque amplitude signals in providing the control signal; and

additional circuit means, coupled between said signal processing means and at least one of the engine and transmission units, for regulating the extent of torque non-uniformity as a function of said control signal.

10. For use in regulating an automotive engine which provides torque to a driveline, the method comprising the steps of:

sensing the instantaneous torque level at a point in the driveline, and providing a torque information signal related to the sensed instantaneous torque level;

operating upon the torque information signal to derive a first series of output signals connoting the maximum values of the torque information signal and a second series of output signals connoting the minimum values of the torque information signal;

using the first and second series of output signals to derive a torque non-uniformity signal; and

using the torque non-uniformity signal in the control of the automotive engine.

4,606,006

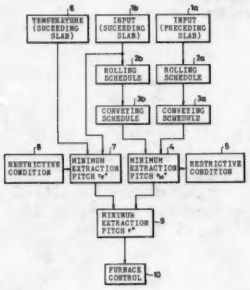
METHOD OF CONTROLLING THE ROLLING EFFICIENCY IN HOT ROLLING

Nariharu Kitao; Masayasu Fukui, both of Okayama; Yoshiharu Hamasaki, and Masaki Kutsuzawa, both of Hyogo, all of Japan, assignors to Mitsubishi Denki K.K., Tokyo and Kawasaki Steel Corp, Hyogo, both of, Japan

Filed Sep. 30, 1982, Ser. No. 431,533
Claims priority, application Japan, Oct. 5, 1981, 56-158430
Int. Cl.⁴ G06F *15/46;* B21B *37/00;* F27D *3/00;* G06G *7/64*
U.S. Cl. 364—472 **1 Claim**

1. A method of continuous hot rolling which comprises the steps of arranging slabs on a mill line for passage through a heating furnace, passing the slabs into the heating furnace, heating the slabs in the heating furnace, extracting the slabs from the heating furnace, and passing the slabs through a finish mill, wherein the method further comprises the steps of determining a rolling schedule and a conveying schedule on the mill line for the slabs arranged in succession based on an aimed

extraction temperature of the slabs from the heating furnace and a predetermined temperature at an exit of the finish mill, calculating a first minimum extraction pitch for the slabs from the heating furnace under restrictions imposed on a mill line side, calculating a second minimum extraction pitch for slabs from the heating furnace under restrictions imposed on a heating furnace side based on slab temperature charged to the heating furnace and the aimed extraction temperature, determining an optimum extraction pitch for the slabs from the heating furnace to maximize the overall rolling efficiency by comparing both of said minimum extraction pitches, and controlling said hot rolling method in accordance with the optimum extraction pitch determination step.

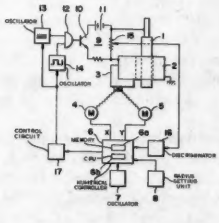


4,606,007

NC ELECTROEROSION METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Apr. 5, 1983, Ser. No. 482,155
Int. Cl.[4] G06F *15/46*; B23P *1/08*
U.S. Cl. 364—474 **10 Claims**



1. An electroerosion method of machining an electrically conductive workpiece with a tool electrode, the method comprising the steps of:

(a) effecting a succession of electrical discharges across an electrical discharge machining (EDM) gap between the tool electrode and the workpiece to electroerosively remove material from the workpiece while consecutively advancing the tool electrode relatively into the workpiece under numerical commands from a numerical controller whose commands in a set numerically prescribe a desired path and extent of the relative advancement;

(b) maintaining electrical parameters of said discharges in a given EDM mode during an initial period of the numerically commanded consecutive advancement of the tool electrode relative to the workpiece;

(c) sensing, by means of said numerical controller, arrival of the tool electrode at a predetermined position in said path relative to the workpiece spaced by a preselected distance from its final position determined by said numerically prescribed extent of the consecutive relative advancement to provide a signal; and

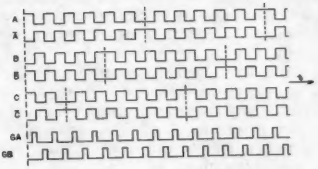
(d) in response to said signal, switching the electrical parameters of said discharges into another EDM mode, and maintaining said switched parameters until said tool electrode reaches said final position relative to said workpiece established in said numerical controller.

4,606,008

ANGULAR POSITION DETECTOR

Thomas D. Wason, Raleigh, N.C., assignor to Cain Encoder Company, Greenville, N.C.

Filed Jul. 25, 1983, Ser. No. 516,714
Int. Cl.[4] G01B *7/30*
U.S. Cl. 364—560 **17 Claims**



1. Method for detecting the presence and/or position of variations in the dielectric and/or permeability confronting a transducer of the type in which said transducer is a prescribed circular array of electrodes and/or pole pieces of the same size and shape, said method comprising the steps of:

(a) generating a plurality of phase modulated drive signal pairs, each pair comprised of a signal and its complement, each drive signal comprising a plurality of two-phase square waves having two levels of the same amplitude and the same frequency, wherein the transition of all drive levels occur synchronously, wherein for a prescribed number of cycles (n cycles) each of said drive signals changes phase by 180° each n/2 cycles; and wherein K equals the number of drive signals, each phase shift occurs n/K cycles ycles subsequent to the phase shift of the previous drive, and where n is selected such that 2n/K is an integer;

(b) feeding each of said drive signals to a separate electrode in said array, wherein each signal and its complement are fed to diametrically opposed ones of said electrodes, and wherein the relationship of said phase progression of the drive signals is proportional to the angular relationship of the electrodes;

(c) combining the drive signals onto a central node in such manner that the superposition of all drive signal pairs is constant in the absence of a variation, and in the presence of a variation the superposition of all drive signal pairs varies synchronously with the drive signals, and wherein the signal on the central node is the superposition of the algebraic sum of all drive signal pairs;

(d) sampling the resultant signal on the central node by generating a synchronous sample signal pulse train(s) which samples between transitions, said sample signal

pulse(s) being of a duration less than one-half the drive signal period and at the same frequency as the drive signal, whereby the resultant synchronously detected signal is in the form of a multi-step signal in which the number of steps is equal to the number of drives;

(e) wherein said synchronously detected signal is a multi-step approximation to a sine wave, wherein the phase angle between the sine wave and a timing point, which is the phase transition of a given drive signal, is proportional to the angular position of the dielectric variation confronting the transducer; and

(f) determining the phase angle of said multi-step sine wave approximation.

16. In combination with an apparatus for detecting the present and/or position of variations in the dielectric and/or permeability constant confronting a transducer of the type in which said transducer is a prescribed circular array of electrodes and/or pole pieces of the same size and shape, and in which a plurality of phase modulated drive signal pairs are generated, each of which drive signals are fed to a separate electrode in said ray and combined onto a central node, the resultant signal from which is sampled and synchronously detected to provide an indication of said angular position, apparatus for generating said drive signal pairs comprising:

(a) generating means for initiating three square wave signals, the phase transition of each differing from each other by 120° and for initiating a carrier signal;

(b) a plurality of exclusive OR gates for combining each of said square wave signals with said carrier signal and thus modulating the phase of said carrier signal by either 180° or 0°;

(c) means for splitting the output signal from each exclusive OR gate into two drive signals and inverting one of the drive signals to form a signal and its compliment;

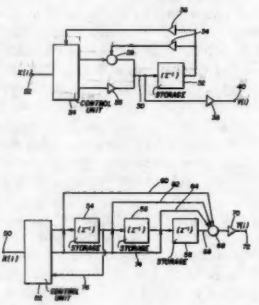
(d) a system clock means, a latch, and a sampling gate wherein said system clock means generates a signal to strobe all said drive signals through said latch responsive to the opening of said sampling gate means.

4,606,009

STEP RESPONSIVE AVERAGING FILTER

Thomas W. Wiesmann, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Aug. 20, 1982, Ser. No. 409,859
Int. Cl.⁴ G06F *15/31*
U.S. Cl. 364—724 **18 Claims**



1. Signal processing apparatus for digital signals comprising:

input means for receiving digital input signals;

storage means for storing signals provided thereto as stored digital signals;

output means responsive to digital signals provided to said storage means for providing digital output signals; and

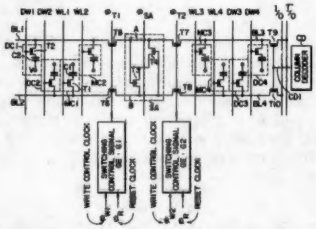
control means responsive to outputs of said input means and to said storage means for computing a difference between digital input signals and a predetermined portion of said digital signals stored in said storage means, comparing said difference with a predetermined difference indicative of noise and, in response to a said difference less than said predeterimined difference, multiplying the magnitude of the stored digital signals by a predetermined factor to obtain a signal product and adding to the signal product said digital input signals.

4,606,010

DYNAMIC MEMORY DEVICE

Shozo Saito, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 24, 1982, Ser. No. 423,145
Claims priority, application Japan, Oct. 23, 1981, 56-169887
Int. Cl.³ G11C *11/24*
U.S. Cl. 365—149 **7 Claims**



1. A dynamic memory device with a plurality of column unit arrangements, each unit arrangement including:

a sense amplifier with a first input terminal and a second input terminal;

at least two pairs of bit lines having a first bit line connected through a first switching transistor to said first input terminal, a second bit line connected through a second switching transistor to said second input terminal, a third bit line connected through a third switching transistor to said first input terminal, and a fourth bit line connected through a fourth switching transistor to said second input terminal;

a fifth switching transistor for connecting said third bit line to one of a pair of data lines and a sixth switching transistor for connecting said fourth bit line to the other data line of said pair of said data lines, said fifth and sixth switching transistors being turned on and off by a column address signal;

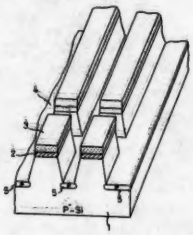
a first group of memory cells of which a plurality of memory cells are connected to said first to fourth bit lines, respectively, each memory cell being selected by a combination of said column address signal and a row address signal; and

first switching control means for cutting off at least one of a first and a second group of switching transistors during only a given period of time including time points before and after a time point at which said column address signal is applied to the gates of said fifth and sixth switching transistors when data is written into a memory cell selected from said first group of memory cells through said pair of said data lines, whereby to rapidly charge the bit line containing said selected memory cell, said first group of switching transistors including said first and second switching transistors and said second group of switching transistors including said third and fourth switching transistors.

4,606,011
SINGLE TRANSISTOR/CAPACITOR SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR MANUFACTURE

Masashi Wada, Yokohama; Shigeyoshi Watanabe, Tokyo, and Fujio Masuoka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Oct. 24, 1985, Ser. No. 791,098
Claims priority, application Japan, Oct. 31, 1984, 59-229203
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—149 5 Claims



1. A semiconductor memory comprising:

(a) a plurality of memory cells formed on a substrate of a first conductivity type, each said memory cell including

(i) an MOS transistor having a gate and a conduction path, and

(ii) an MOS capacitor coupled to one side of said conduction path, said MOS capacitor including

(aa) a first electrode of a second conductivity type formed in said substrate in contact with said one side of said conduction path, said first electrode having at least three sides,

(bb) a thin insulation film formed on said first electrode to cover said three sides of said first electrode,

(cc) a second electrode formed on said thin insulation film and opposite each of said at least three faces, and

(dd) a device protection film formed on said second electrode;

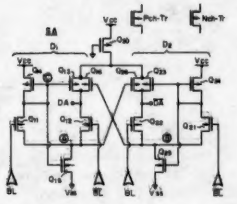
(b) a plurality of word lines each coupled to the gates of ones of said plurality of MOS transistors in a different row; and

(c) a plurality of bit lines each coupled to the other side of the conduction paths of ones of said MOS transistors in a different column.

4,606,012
SENSE AMPLIFIER

Atuo Koshizuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 4, 1984, Ser. No. 596,707
Claims priority, application Japan, Apr. 7, 1983, 58-060032
Int. Cl.[4] G11C *7/00*; G01R *19/00*; H03F *3/45*
U.S. Cl. 365—189 7 Claims



1. A sense amplifier comprising

a pair of differential amplifier circuits, for receiving complementary input signals and producing complementary output signals, each of said differential amplifier circuits including:

a pair of differential input transistors for receiving said complementary input signals, each said differential input transistor having a source connected at a common connecting point of the respective differential amplifier circuit to the source of the other differential input transistor, a gate connected to receive a respective one of said complementary input signals, and a drain, wherein said complementary signals applied to a first one of the pair of differential amplifier circuits have respective phases opposite to the phases of said complementary signals applied to the other of said pair of differential amplifier circuits;

a feedback transistor having a drain connected to said commonly connecting point, a source connected to ground, and a gate connected to said drain of a first one of the differential input transistors;

first pull up means connected between a power supply and to said drain of the second of the differential input transistors; and

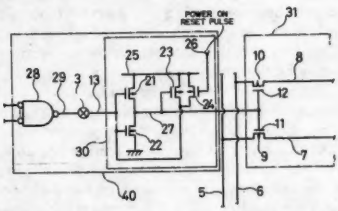
second pull up means including an output pull up transistor having a source and a drain connected between the power supply and the second differential input transistor,

wherein each said output pull up transistor in each said differential amplifier circuit has a gate connected to receive an output of said feedback transistor in the other one of said differential amplifier circuits.

4,606,013
REDUNDANCY-SECURED SEMICONDUCTOR MEMORY

Masahiko Yoshimoto, Takarazuka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,604
Claims priority, application Japan, Feb. 17, 1983, 58-26463
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—200 13 Claims



1. A redundancy-secured semiconductor memory including a matrix of regular memory cells consisting of a plurality of regular memory cell trains, an extra memory cell train for redundant construction, and a taking-over system for enabling said extra memory cell train to take over the function of a faulty regular memory cell train including a faulty bit, wherein said taking-over system comprises:

first means for selecting one from said regular memory cell trains;

second means for selecting, a said extra memory cell train said selected extra memory cell train replacing a said faulty regular memory cell train;

said first selecting means including,

a decoder decoding an input address signal, and

a selectively breakable current conducting means connected to said decoder for disconnecting said faulty regular memory cell train, thereby disconnecting the

output of said decoder from said faulty regular memory cell train; and

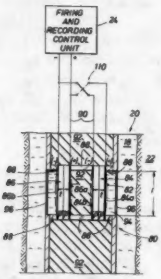
monostable latching means connected between said current conducting means and said selected one from said regular memory cell train, said monostable latching means developing a signal when said current conducting means is disconnected, whereby said faulty regular memory cell train is kept in an unselected state, said monostable latching means functioning as a driver between said decoder and said selected one of said regular memory cell trains when said current conducting means is not disconnected.

4,606,014

ACOUSTIC DIPOLE SHEAR WAVE LOGGING DEVICE

Graham A. Winbow, Houston, and Sen-Tsuen Chen, Sugar Land, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jul. 6, 1982, Ser. No. 395,449
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—75 **2 Claims**



1. A method of logging the earth surrounding a wall wherein an elongated member having two ends with at least one end attached to a housing which is lowered into a fluid contained by the well, said method comprising the sequential step of:

determining the approximate range of shear wave velocities of the earth surrounding the fluid;

vibrating the unattached portion of the elongated member to create in the fluid a positive compressional wave in one direction and simultaneously a negative compressional wave in the opposite direction, said two compressional waves interfering to produce a dipole shear wave in the earth surrounding the well wherein the frequencies of the dipole shear wave are in the preferred frequency range corresponding to the approximate range of shear wave velocities of the earth surrounding the fluid in accordance with the table below:

Approximate Range of Shear Wave Velocities	Preferred Frequency Range of Dipole Shear Wave
5000–6000 ft/sec	(10/d)(1.5–7.5) kHz
6000–7000 ft/sec	(10/d)(3–12) kHz
7000–8000 ft/sec	(10/d)(4–16) kHz
8000–9000 ft/sec	(10/d)(4.5–20) kHz

where d is the well diameter in inches; and

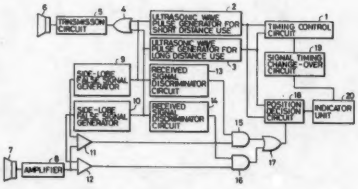
detecting at at least one selected location spaced longitudinally along the borehole from the member the refracted compressional wave in the fluid caused by refraction of the dipole shear wave.

4,606,015

METHOD AND APPARATUS FOR DETECTING POSITION OF OBJECT WITH ULTRASONIC WAVE

Kenichi Yamaguchi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,403
Claims priority, application Japan, Aug. 27, 1982, 57-147539
Int. Cl.[4] G01S *15/12*
U.S. Cl. 367—95 **7 Claims**



1. A method for detecting the position of an object with an ultrasonic wave comprising the steps of:

transmitting alternately the pulses of at least first and second different kinds of ultrasonic wave pulses corresponding to different distance ranges to the object, including setting the pulse widths and the transmission intervals between the respective first and second kinds of ultrasonic wave pulses in accordance with the corresponding different distance ranges to the object;

receiving reflected ultrasonic wave pulses from the object in response to the transmitted ultrasonic wave pulses;

discriminating the received ultrasonic wave pulses; and

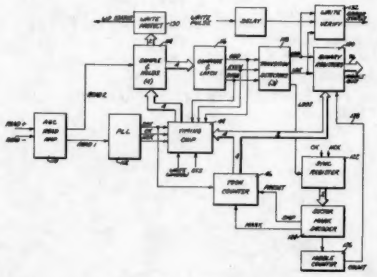
determining the position of the object depending on the time period from the transmission and reception of the discriminated ultrasonic wave pulses.

4,606,016

WRITE PROTECTION AND DATA DETECTION USING DIFFERENTIAL DETECTOR

Johannes J. Verboom, and Roger R. Bracht, both of Colorado Springs, Colo., assignors to Optical Storage International, N.Y.

Filed Feb. 8, 1984, Ser. No. 578,152
Int. Cl.[4] G11B *3/90, 27/36*
U.S. Cl. 369—54 **7 Claims**



1. Apparatus for using differential data detection in write protection of an optical recording apparatus, comprising

a write protect byte of data recorded as the initial byte of every data block, said byte having a hole recorded at a predetermined position relative to a reference position;

read means for reading data from an optical recording surface immediately prior to writing data on the surface;

a pair of sample and hold cells responsive to read signals from said read means;

means for triggering a first of said sample and hold cells at said reference position;

means for triggering a second of said sample and hold cells at the position just prior to said predetermined position;

first comparator means for comparing the first sample and hold cell value with the second sample and hold cell value and for generating a comparator output when the latter exceeds the former by a predetermined amount;

means responsive the comparator output of said comparator means for terminating writing in the block when the optical system is writing a write protect byte of data.

4,606,017
OPTICAL RECORDING DISC

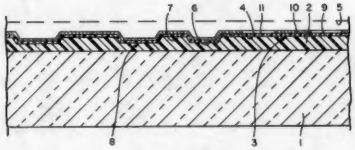
Dirk J. Broer, and Leendert Vriens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,987

Claims priority, application Netherlands, Mar. 17, 1983, 8300960

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 369—275 **4 Claims**



1. An optical recording disc comprising a transparent substrate plate which on at least one side comprises a layer of a transparent formstable synthetic resin in which an optically readable information track is provided and which on the side of the layer of dimensionally stable synthetic resin comprises a recording layer in which recording layer optically readable information bits are formed by exposure to modulated laser light, characterized in that a thin synthetic resin layer of a linearly polymerized amorphous synthetic resin is provided between the layer of transparent formstable synthetic resin and the recording layer, the thin layer following the contours of the information track and reducing the energy which is minimally required to form an information bit in the recording layer by means of the laser light.

4,606,018
OPTICAL RECORDING MEDIUM

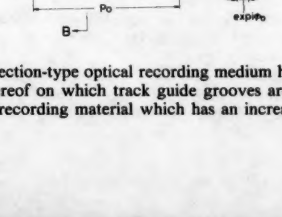
Mikio Sugiki, Yokohama, and Kenjiro Watanabe, Shin, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,083

Claims priority, application Japan, Nov. 25, 1982, 57-206494

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 369—279 **2 Claims**



1. A reflection-type optical recording medium having, on a surface thereof on which track guide grooves are formed, a layer of a recording material which has an increased energy reflection coefficient data is written therein, wherein the track guide grooves are formed such that a depth ϕ_0 thereof given by:

$$\phi_0 = 2 \cdot n \cdot d/\lambda \cdot 2\pi$$

(where n is a refractive index of the medium which covers said track guide grooves and which transmits input/output read light therethrough, d is an actual step of said track guide grooves, and λ is a wavelength of the read light) satisfies:

(i) $\sin \phi_0 < 0$ for $\theta_2 - \theta_1 > 0$, or

(ii) $\sin \phi_0 > 0$ for $\theta_2 - \theta_1 < 0$

where θ_1 is the phase of the reflected light before data is written on the recording material θ_2 is the phase of the reflected read light after data has been written on said recording material and which are defined by the equations:

$$r_1 = R_1 \exp i\theta_1$$

$$r_2 = R_2 \exp i\theta_2$$

$R_1 < R_2$

(where r_1 is a complex reflection coefficient before data has been written on said recording material and r_2 is a complex reflection coefficient after data has been written on said recording material, and R_1 is an absolute value of the complex reflection coefficient before data has been written on said recording material and R_2 is an absolute value of the complex reflection coefficient after data has been written on said recording material).

4,606,019
RECEIVE DATA PROCESSING DEVICE FOR TDMA SATELLITE COMMUNICATIONS NETWORK

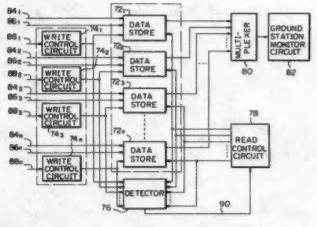
Haruki Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 9, 1985, Ser. No. 732,421

Claims priority, application Japan, May 15, 1984, 59-97018

Int. Cl.⁴ H04J *1/16*

U.S. Cl. 370—13 **1 Claim**



1. A receive data processing device installed in a reference ground station which totally monitors and controls operating conditions of two or more other ground stations which constitute a ground traffic system of TDMA satellite communications channels, said device comprising:

data store means for temporarily storing channel monitoring information signals which respectively are associated with operating conditions of the ground stations and separated from *n* (particular positive integer) sequences of receive burst signals, which are received by way of an *n*-channel transponder loaded in a predetermined communication satellite, and predetermined burst identification signals for identifying the channel monitoring information signals in correspondence with the respective ground stations;

write control means for temporarily storing in the data store means associated with the *n* sequences of receive burst signals the channel monitoring information signals and burst identification signals associated respectively with

the predetermined ground stations which correspond to the respective sequences;

read control means for sequentially specifying in response to a predetermined read data sequence specify signal the channel monitoring information signals and the burst identification signals which are temporarily stored in the data store means and associated respectively with the ground stations which are associated with the *n* sequences of received burst signals, and then reading out the specified information signals each by an amount which is specified by the read data sequence specify signal;

detector means for detecting amounts of data stored in data store areas of the data store means which respectively are associated with the ground stations in the *n* sequences in response to predetermined write data amount indication signals and read data amount indication signals which respectively are outputted from the write control means and the read control means during a write control operation and a read control operation, and then generating the read data sequence specify signal which gives priority to a particular one of the data store areas having stored the greatest amount of data and specifies a particular amount of data to be read out;

multiplexer means for multiplexing the channel monitoring information signals and the burst identification signals which respectively are associated with the ground stations in the *n* sequences and sequentially read out of the data store means; and

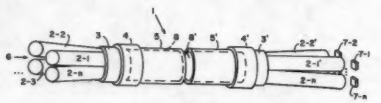
ground station monitor means for classifying the multiplexed channel monitoring information signals and the burst signals outputted from said multiplexer means and associated with the respective ground stations in the *n* sequences, and functioning to monitor use of the TDMA system which is related to operating conditions of the respective ground stations.

4,606,020

EFFICIENT DESIGN TECHNIQUE FOR WAVELENGTH DIVISION MULTIPLEXING

Paul B. Ruffin, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 3, 1984, Ser. No. 576,976
Int. Cl.[4] H04B *9/00*
U.S. Cl. 370—3 **1 Claim**



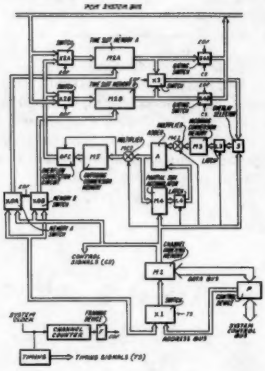
1. A multiplexer comprising a first set of a plurality of electromagnetic energy carrying members each transmitting electromagnetic signals of different wavelengths; one end of each of the members being packaged to form a bundle; each member carries a signal of a different wavelength; a larger electromagnetic energy carrying member being lined up and joined to said bundle so as to couple all of the electromagnetic signals into said larger member for multiplexing the signals; a second set of a plurality of electromagnetic carrying members equal in number to said first set of members; said second set of members being joined to an opposite end of said larger member for coupling said electromagnetic signals; said larger member is cut into first and second parts and is aligned spatially to transfer said signals; the first part of said larger member being joined to the first set of members being rotated relative to second part of said larger member; a plurality of demultiplexers individually connected to said second set of electromagnetic carrying members; the larger member is comparable in size to the size of said bundle; said electromagnetic carrying members are optical fibers; said fibers being joined in bundles and being spliced by an automatic splicing machine employing electric arc fusion; and a casing surrounding where the bundles are spliced for maintaining the efficiency of the bond.

4,606,021

DIGITAL CONFERENCE CIRCUIT

Walter K. Wurst, Wellington, Canada, assignor to ITT Corporation, New York, N.Y.

Filed Aug. 17, 1984, Ser. No. 641,625
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—62 **18 Claims**



1. A conference circuit for a communication system comprising:

means for combining conference signals, and

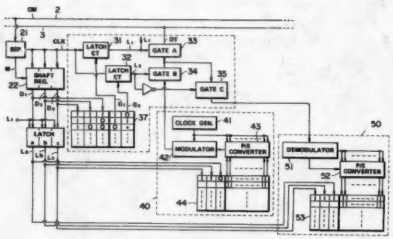
means, coupled to said combining means, for reducing additive background noise portions of said conference signals, wherein said reducing means comprises a logic device containing a conversion table having a plurality of overlayed modified sections.

4,606,022

DATA TRANSMISSION/RECEPTION NETWORK SYSTEM

Tadashi Suzuki; Norimasa Kishi, both of Yokohama; Minoru Tomikashi, Zushi, and Toru Futami, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Mar. 23, 1984, Ser. No. 592,547
Claims priority, application Japan, Jun. 13, 1983, 58-105541
Int. Cl.[4] H04J *3/02, 3/06*
U.S. Cl. 370—85 **5 Claims**



1. A network system for transmitting and receiving data between a plurality of stations via a data transmission line, said system comprising:

(a) first means for generating a clock pulse train having a predetermined period and being modulated with a predetermined code signal, and for applying the modulated

clock pulse train to a synchronous signal bus line connected to the plurality of stations, said code signal defining a specific address in each period of said clock pulse train,

(b) second means provided in each station connected to said signal bus line for receiving the modulated clock pulse train and for detecting a specific address allocated to such station from among successive addresses defined by said modulated clock pulse train; and

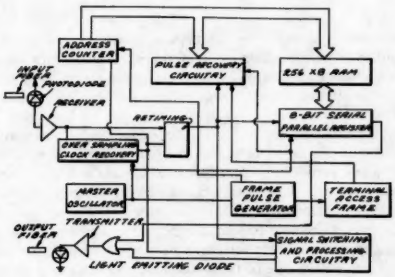
(c) third means provided in each station connected to said signal bus line for transmitting or receiving a plurality of bits of data serially via the transmission line during a period of said clock pulse train in which said second means detects the specific address that has been allocated to said station.

4,606,023

GUARD TIME ELIMINATION IN A TIME-DIVISION MULTIPLEXED, ACTIVE STAR-COUPLED, HALF-DUPLEX MODE, SYNCHRONOUS COMMUNICATIONS NETWORK

Robert E. Dragoo, Melbourne, Fla., assignor to Applied Dynamic Research, Inc., Rockville, Md.

Filed May 31, 1984, Ser. No. 615,555
Int. Cl.[4] H04J *3/24, 3/06;* G02F *1/00, 2/00*
U.S. Cl. 370—94 **17 Claims**



1. In a time-division multiplexed, active star-coupled, half-duplex mode, synchronous communications network having an active central node and a plurality of user terminals, each terminal connected to said central node by a single fiber-optic cable, the method of eliminating guard time at said central node between data packets received from the user terminals, comprising the steps of:

acquiring bit timing at each one of said user terminals;

acquiring frame information at said user terminals;

establishing word slot timing at each one of said user terminals; and

adjusting the transmit word slot timing of said terminals to eliminate guard time at the central node between the data packets received from the user terminals.

4,606,024

HIERARCHICAL DIAGNOSTIC TESTING ARRANGEMENT FOR A DATA PROCESSING SYSTEM HAVING OPERATIONALLY INTERDEPENDENT CIRCUIT BOARDS

Kathleen K. Glass, Boulder, and Lawrence J. Haas, Broomfield, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

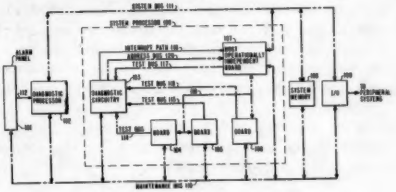
Filed Dec. 20, 1982, Ser. No. 451,258
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—16 **13 Claims**

1. A method of testing a data processor comprising a plurality of operationally interdependent discrete circuit groups hierarchically arranged with respect to operational dependency in processor function, said method comprising the steps of:

(1) storing a plurality of diagnostic test subroutines in a memory to sequentially test said plurality of discrete circuit groups,

(2) applying a diagnostic test subroutine address to said memory where said address represents the address of a first one of said diagnostic test subroutines associated with the testing of said first circuit group having the least operational dependency in said processor function,

(3) executing said first diagnostic test subroutine in response to the receipt of said address,



(4) collecting test data applied from circuit test points associated with said first circuit group during the execution of said first diagnostic test subroutine,

(5) comparing said collected test data from said first circuit group with priorly derived predicted test data for said first circuit group, and

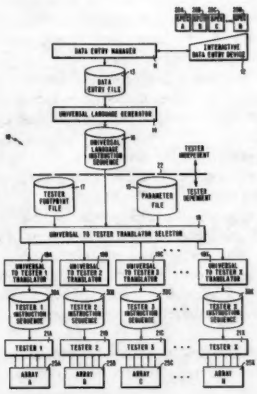
(6) testing in sequence based on operational dependency the others of said circuit groups of said hierarchy if said collected test data for said first circuit group matches said predicted data for said first circuit group.

4,606,025

AUTOMATICALLY TESTING A PLURALITY OF MEMORY ARRAYS ON SELECTED MEMORY ARRAY TESTERS

Robert M. Peters, Wappingers Falls; Henri D. Schnurmann, Monsey, and Louis J. Vidunas, Wappingers Falls, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,597
Int. Cl.[4] G06F *31/28*
U.S. Cl. 371—20 **36 Claims**



1. A system for automatically testing an integrated circuit memory array solely on one of a plurality of different array testers, comprising:

an interactive data entry device for entering tester independent characterizing information, DC testing parameters, AC testing parameters and AC test pattern choices for said array;

a universal language generator for generating a tester independent universal language instruction sequence for carrying out DC parametric tests, AC parametric tests and AC pattern tests for said array, based upon said characterizing information, DC testing parameters, AC testing parameters and AC test pattern choices;

a plurality of universal to tester translators, each of which is associated with a respective one of said plurality of different array testers, for translating the entirety of said tester independent universal language instruction sequence into a respective tester dependent instruction sequence for carrying out said DC parametric tests, AC parametric tests, and AC pattern tests for said array on the associated tester; and,

means for applying said tester dependent instruction sequence to the associated tester to cause the associated tester to test said array thereon.

4,606,026

ERROR-CORRECTING METHOD AND APPARATUS FOR THE TRANSMISSION OF WORD-WISE ORGANIZED DATA

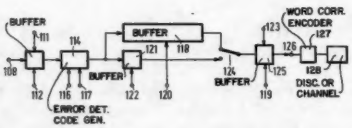
Constant P. M. J. Baggen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1984, Ser. No. 573,522

Claims priority, application Netherlands, Jan. 25, 1983, 8300249

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—39 **14 Claims**



1. Method for encoding word-wise organised data, comprising the steps of:

receiving a stream of user words of fixed lengths and generating therefrom successive groups of data words each group comprising a first number of user words and a second number of redundancy words according to an error detecting code;

replicating each of said first groups of data words a predetermined number of times thereby producing a plurality of corresponding versions of each of said first groups of data words;

creating respective delay times between respective corresponding versions, and reconstituting a serial stream of all first groups of data words so formed;

adding a first series of check words on the basis of a first error correcting code to said first groups of data words;

interleaving said first groups of data words and said first series of check words using mutually different delays, said delays having respective values differing by an interleaving increment, thereby generating second groups of words,

adding a second series of check words to said second groups of words on the basis of a second word error correcting code, thereby forming third groups of words having a recurrence period representing a frame; and wherein said respective delay times and said interleaving increment cause different versions of said data words to be mapped on different frames.

4,606,027

ERROR CORRECTION APPARATUS USING A VITERBI DECODER

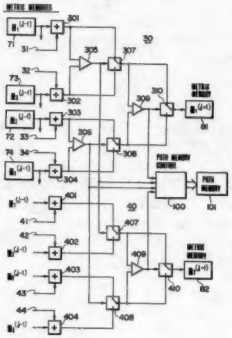
Susumu Otani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 10, 1984, Ser. No. 659,533

Claims priority, application Japan, Oct. 12, 1983, 58-190511

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—43 **5 Claims**



1. An error correcting apparatus comprising:

a source of path metrics associated respectively with states in a given time slot of a Viterbi trellis diagram, said path metrics being updated sequentially in response to new path metrics;

branch metric generating means for sequentially generating a branch metric in response to input convolutional code data and providing a plurality of sums of the branch metrics over successive branches diverging from said given time-slot states to later time-slot states;

adder means coupled to said source and to said branch metric generating means for adding the updated path metrics to a respective one of the branch metric sums to provide a plurality of second sums;

comparing means coupled to said adder means for comparing said second sums and detecting the highest of the compared second sums to provide a control signal representing the highest of the compared second sums;

selecting means coupled to said comparing means for selecting the detected highest second sum in response to said control signal for providing a new path metric to said source for updating a previous path metric; and

storage means coupled to said comparing means for storing data indicating the path associated with the selected highest second sum.

4,606,028

DIGITAL TRANSMISSION SYSTEM

Johannes Wagenmakers, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,901

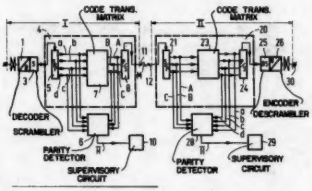
Claims priority, application Netherlands, Mar. 29, 1983, 8301098

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—49 **4 Claims**

1. A digital transmission system comprising a transmitter section which includes an encoding arrangement and a receiver section which includes a decoding arrangement, at least one code translation matrix being provided between the input and the output of the encoding arrangement and at least one code translation matrix being provided between the input and the output of the decoding arrangement; code conversion supervisory means comprised in at least one of the receiver

section and the transmitter section, such code conversion supervisory means comprising a parity detector which is coupled to the inputs and to the outputs of the code translation matrix of the section in which such code conversion supervi-



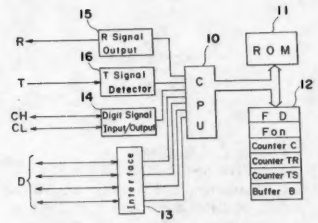
sory means is comprised; the parity detector being adapted to detect and invert exception parity conditions arising from the translation code used by the encoding and decoding arrangements.

4,606,029

DATA TRANSMISSION SYSTEM

Toshiaki Nagao, Muko, and Toshio Shiho, Takatsuki, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 1, 1983, Ser. No. 556,860
Claims priority, application Japan, Dec. 1, 1982, 57-211553
Int. Cl.[4] G06F *11/14*
U.S. Cl. 371—69 **1 Claim**



1. A system for transmitting data between a transmitter and a receiver through a transmission line, comprising:

a transmitter on one end of the transmission line producing data to be transmitted on the transmission line from the transmitter for a predetermined time;

a control output device connected to the transmitter which outputs a number whose value depends on the state of operation of said control output device during the period of time data are transmitted through the transmission line; and

a receiver on another end of the transmission line comprising

setting means connected to the control output device for setting a number of times for repeatedly reading in said data by said receiver, said number being the number output by the control output device,

reading means for reading in repeatedly and consecutively said data the number of times set by the setting means during the predetermined time in which the data are produced on the transmission line, and

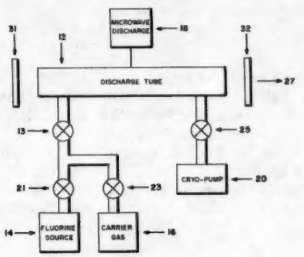
accepting means for accepting the data only when the data are read, without any change, for said number of times.

4,606,030

VACUUM ULTRAVIOLET LASER

Joseph Berkowitz, Hinsdale, Ill.; Branko M. Ruscic, Zagreb, Yugoslavia, and John P. Greene, Woodridge, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 6, 1984, Ser. No. 628,700
Int. Cl.[4] H01S *3/30*
U.S. Cl. 372—5 **9 Claims**



1. An atomic fluorine laser amplifier comprising:

a chamber;

a fluorine containing gas flowing in said chamber;

electric discharge means to dissociate said gas to provide a population inversion of fluorine atoms in an exited state; and

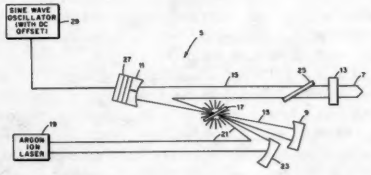
means for directing incident radiation at one or more wavelengths selected from the group consisting of 6089.2 Å, 6046.8 Å, 3592.7 Å, 3574.1 Å, 680.7 Å and 682.6 Å through said chamber to produce amplified spontaneous stimulated emission from said excited fluorine atoms at corresponding wavelengths.

4,606,031

DEVICE FOR FREQUENCY MODULATION OF A LASER OUTPUT SPECTRUM

James R. Beene, and Curtis E. Bemis, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1984, Ser. No. 631,693
Int. Cl.[4] H01S *3/10*
U.S. Cl. 372—28 **3 Claims**



1. A device for frequency modulating the output of a dye laser, comprising:

a continuous wave laser, having a resonant laser cavity including at least one mirror disposed for movement along an optical axis to alter the beam path of said cavity and thus the laser output wavelength;

a piezoelectric transducer capable of mechanical resonance vibrations along a longitudinal axis thereof in the range of from about 40 to 400 kHz when excited by a low amplitude excitation signal of corresponding frequency applied to an input thereof, said transducer being coupled to said

at least one mirror to vibrate said mirror along said optical axis when an excitation signal is applied thereto; and

an oscillating voltage sine wave source connected to said input of said piezoelectric transducer for generating said excitation signal so that said at least one mirror is vibrated along said optical axis at a frequency equal to said mechanical resonance vibration frequency of said transducer, thereby frequency modulating the output of said dye laser.

4,606,032

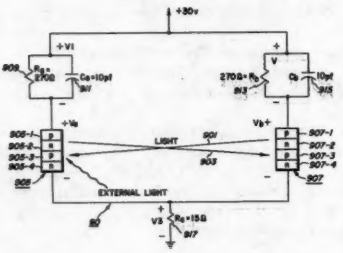
ASTABLE OPTICAL MULTI-VIBRATOR

Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 589,796, Mar. 14, 1984, Pat. No. 4,555,785, which is a division of Ser. No. 336,750, Jan. 4, 1982, Pat. No. 4,450,567, which is a division of Ser. No. 56,765, Jul. 12, 1979, Pat. No. 4,316,156. This application Aug. 7, 1985, Ser. No. 763,381

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—38 **2 Claims**



1. An optical astable multivibrator utilizing plural layer semiconductor laser diodes which are electrically biased to the point wherein light input causes the laser diodes to commence lasing, the improvement being characterized by:

a first laser diode (905),

a first parallel circuit of a first resistor (909) and first capacitor (911) in series with said first laser diode (905),

a second laser diode (907) in close proximity to and in light relationship with said first laser diode (905),

a second parallel circuit of a second resistor (913) and second capacitor (915) in series with said second laser diode (907), said first laser diode (905) and first parallel circuit being in parallel circuit relationship with said second laser diode (907) and second parallel circuit,

a third resistor (917) and a bias supply voltage (V) in series with said laser diode and resistance/capacitance circuits, such that when an external light source is impinged on said first laser diode, said first laser diode will commence to emit laser light with a concomitant increase of current through said first capacitor (911) and third resistor (917) until the voltage across said third resistor (917) reaches a value sufficient to cause said first laser diode (905) to turn off, some of the light (903) emitted by said first laser diode (905) being caused to impinge on said second laser diode (907) which will in turn commence to emit laser light (901) with a concomitant increase of current through said second capacitor (915) and third resistor (917) until the voltage acrosss said third resistor (917) reaches a value sufficient to cause said second laser diode (907) to turn off, said alternate action of the first and second laser diodes continuing at least until the external light source is removed.

4,606,033

COMBINATION REFRACTIVE INDEX-GUIDING TYPE AND A GAIN-GUIDING TYPE SEMICONDUCTOR LASER DEVICE

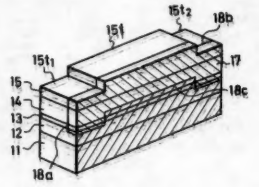
Masamichi Sakamoto, Isehara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,789

Claims priority, application Japan, Sep. 30, 1982, 57-172201

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—45 **4 Claims**



1. A semiconductor laser device which includes a resonant cavity and in which a first cladding layer, a light emitting active layer, a second cladding layer, a capping layer and a second electrode are formed on a first major surface of a semiconductor substrate having a first electrode on its second major surface wherein the improvement comprises:

(a) a stripe light emission region formed on said substantially flat active layer;

(b) refractive index-guiding operating means formed on at least one end portion of said stripe light emission region; and

(c) gain-guiding operating means formed at one inside portion of said stripe light emission region.

4,606,034

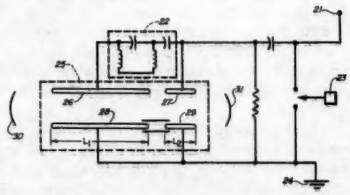
ENHANCED LASER POWER OUTPUT

James G. Eden, Champaign, Ill.; Andrew W. McCown, Los Alamos, N. Mex., and David B. Geohegan, Urbana, Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.

Filed Feb. 19, 1985, Ser. No. 702,547

Int. Cl.[4] H01S *3/22*

U.S. Cl. 372—57 **21 Claims**



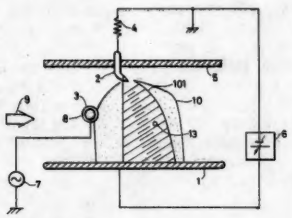
1. In a pulsed laser system having substantially no readily ionizable additive material therein and, including a resonator cavity, the improvement comprising means associated with said cavity for injecting a minor proportion of radiation energy into an excimer laser at a selected time interval prior to the emergence of a laser pulse therefrom, which interval exceeds 20 nanoseconds; such that a substantial enhancement of the energy of the emergent laser pulse is achieved.

4,606,035

LATERAL EXCITATION TYPE GAS LASER

Masao Hishii; Masaaki Tanaka; Yukio Sato; Haruhiko Nagai, and Norikazu Tabata, all of Hyogo, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,207
Int. Cl.[4] H01S 3/097
U.S. Cl. 372—87 14 Claims



1. In a lateral excitation type gas laser device, comprising:
anode means and cathode means arranged opposed to each other, a gap being formed therebetween;
means for providing a flow of laser gas between said anode means and cathode means;
a high voltage DC source for applying a high DC voltage for causing a glow discharge between said anode and cathode means;
a dielectric electrode disposed in said flow of laser gas upstream of said anode and cathode means in said flow of laser gas; and
a high voltage high frequency source for applying a high frequency high voltage for causing a silent discharge between said dielectric electrode and said anode and cathode means,
the improvement wherein said dielectric electrode has a diameter defined by:

$$3\text{ mm} < D < d/2$$

where D is the diameter of said dielectric electrode and d is the length of the gap between said anode and cathode means,
and wherein said dielectric electrode is disposed in a region defined by:

$$0 \leqq l_1 \leqq 2d, \text{ and } 0 \leqq l_2 \leqq d$$

where l_1 is the distance in the direction of laser gas flow between said dielectric electrode and said cathode means, and l_2 is the distance between said dielectric electrode and said anode means.

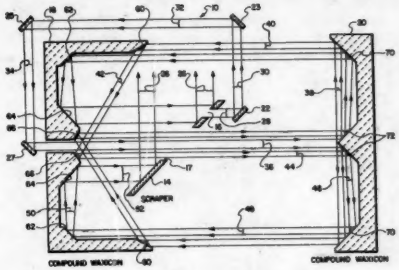
4,606,036

DECENTERED ANNULAR RING RESONATOR WITH INTERNAL MISALIGNMENT CANCELLATION

Dale A. Holmes, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 29, 1983, Ser. No. 527,593
Int. Cl.[4] H01S 3/08
U.S. Cl. 372—95 10 Claims

1. In a DARR in a laser, the improvement comprising:
means for reflecting the feedback beam on a first cycle around the DARR; and
means for reflecting the once-cycled beam in a second cycle around the DARR and for changing the azimuthal orientation of the once-cycled beam by 180° substantially at the start of the second cycle.

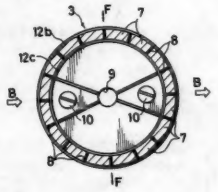


4,606,037

APPARATUS FOR MANUFACTURING SEMICONDUCTOR SINGLE CRYSTAL

Kazutaka Terashima, Ebina, and Tsuguo Fukuda, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 571,194
Claims priority, application Japan, Jan. 18, 1983, 58-5182; Apr. 27, 1983, 58-73037
Int. Cl.[4] H05B 11/00
U.S. Cl. 373—6 10 Claims



1. An apparatus for the manufacture of a semiconductor single crystal, comprising a furnace possessing a heater member adapted to heat a crucible for fusing raw materials for the crystal, insulative thermally resistant reinforcing members for reinforcing said heater member of said furnace, and a magnetic field applying device formed of at least one magnet means opposed across a space to the lateral side of said furnace.

4,606,038

PLANT FOR PRODUCING CALCIUM CARBIDE

Walter Eugschelder, Linz; Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, all of Austria, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

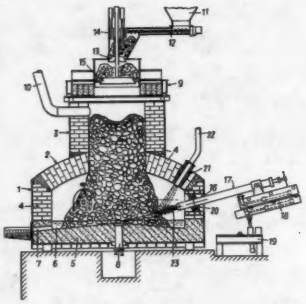
Filed Dec. 1, 1983, Ser. No. 557,354
Claims priority, application Austria, Dec. 22, 1982, 4637/82
Int. Cl.[4] H05H 1/42
U.S. Cl. 373—24 7 Claims

1. A plant for producing calcium by melting and reducing a burden including as components, coal and one or both of CaO and $CaCO_3$ comprising:
a melting furnace having a melting space defined by a bottom part, side walls and a vault part carried by side walls and having an opening therein,
at least one plasma burner penetrating said melting furnace into said melting space,

a bottom electrode disposed in said bottom part, said at least one plasma burner being directed towards said bottom electrode and forming a plasma torch therebetween,

said bottom part comprising an upper surface in the form of an upwardly extending cone, said bottom electrode extending through said bottom part to the top of said cone, the downwardly diverging surface of said cone meeting said side walls to provide a groove for molten stock surrounding said bottom electrode, and

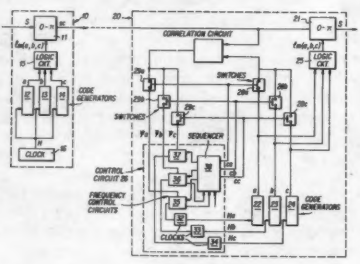
means for supplying said burden components into said melting space through said opening in the vault part to said bottom part in the region of said plasma torch to be melted and reduced thereby to produce CaC_2 and CO, the CO produced by the reaction of said components in the region of the plasma torch flowing through the unreacted portions of said burden components before they reach said region.



4,606,039
SPREAD SPECTRUM CODING METHOD AND APPARATUS

Michel J. R. Nicolas, Paris, and Bruno R. Sebilet, Suresnes, both of France, assignors to Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed Jul. 10, 1984, Ser. No. 629,510
Claims priority, application France, Jul. 21, 1983, 83 12043
Int. Cl.[4] H04L *9/02;* **H04B** *15/00*
U.S. Cl. 375—1 **7 Claims**

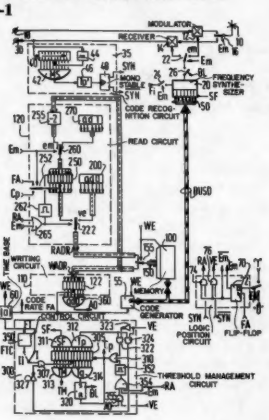


1. A process for coding and decoding an input signal for a spread spectrum transmission, including the steps of phase modulating said input signal by means of a O-pi modulator controlled by a code formed from a sequence of binary values generating the code to control the modulator by combining in accordance with a logical majority function an odd number of elementary codes generated from code generators and including pseudo random binary sequences including different numbers of bits, transmitting the modulated signal, receiving the transmitted signal, phase demodulating the received signal by means of a O-pi demodulator controlled by the same code as used in the transmitter to produce an output signal which is the output signal of said process and a duplicate of said input signal, generating in the receiver the code to control the demodulator from the same elementary codes as used in the transmitter, and synchronizing the code used in the receiver with that used for transmission by correlating each of the elementary codes with the received signal.

4,606,040
TRANSMITTING-RECEIVING STATION FOR A SYSTEM FOR TRANSMITTING DATA BY FREQUENCY HOPPING

Guy A. J. David, Thiais; Jean-Pierre H. Van Uffelen, Chevilly Larue, and Jean-Pierre M. Defeuilly, Cressely, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,551
Claims priority, application France, Sep. 30, 1983, 83 15611
Int. Cl.[4] H04B *14/02, 15/00*
U.S. Cl. 375—1 **6 Claims**



1. In a transmitting-receiving system for transmitting data by frequency-hopping, comprising a code-generator for defining the use of a plurality of channels in accordance with a high-speed skip law in a transmitting mode or in a receiving mode and in accordance with a low-speed skip law in a stand-by mode, the high-speed skip law consisting in the sequential separate use of each of the channels for duration Tp, while the low-speed skip law governs the changes of the receiving channels employed during N×Tp, each corresponding to a determined center channel of a sequence of N channels of said high-speed skip law, the center channel having a synchronizing code; the improvement wherein the system comprises a memory, a write circuit connected to the memory and generator for progressively storing the codes in the memory received from the generator, and a read circuit connected to the memory for reading the codes stored therein as a function of the position to which the transmitting receiving system has been adjusted.

4,606,041
FREQUENCY HOPPING DATA COMMUNICATION SYSTEM

Joseph Kadin, Florham Park, N.J., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 19, 1984, Ser. No. 662,490
Int. Cl.[4] H04L *27/26, 1/08;* **H04B** *15/00*
U.S. Cl. 375—1 **17 Claims**

1. A frequency hopping data communication system comprising:

first means to produce identical first and second pseudo-noise code streams time displaced with respect to each other, each of said first and second code stream providing

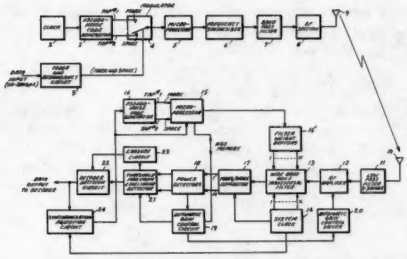
a frequency hopping rate equal to n times the rate of binary data being transmitted, and including redundancy circuit means for repeating said binary data x times, where n and x are integers greater than one;

second means coupled to said first means, said second means being responsive to said repeated data and said first and second code streams to provide a modulated signal for conveying said data, said modulated signal having different randomly occurring frequencies representing both binary conditions of said repeated data and random spacing between said randomly occurring frequencies representing each of said binary conditions of said repeated data, each bit of said repeated data being represented by n of said randomly occurring frequencies;

third means coupled to said second means to receive said modulated signal and to separate said randomly occurring frequencies representing each of said binary conditions from said received modulated signal;

fourth means coupled to said third means to recover said data from said separated, received modulated signal; and

fifth means coupled to said third means and said fourth means to synchronize said third means to said received modulated signal wherein said first means includes



a first pseudo-noise code generator having a pair of taps disposed to provide said first and second code streams time displaced with respect to each other and wherein said second means includes

switching means coupled to said first code generator responsive to said repeated data to couple said first code stream to its output upon each occurrence of one of said binary conditions and to couple said second code stream to its output upon each occurrence of the other of said binary conditions,

a first microprocessor coupled to said output of said switching means, said first microprocessor having a table of values each of which represents a different one of said different random frequencies, said first microprocessor responding to said first and second code streams to sequentially couple predetermined ones of said values to its output, and

frequency generating means coupled to said output of said first microprocessor responsive to said predetermined ones of said values to provide said different randomly occurring frequencies for both of said binary conditions.

4,606,042

METHOD FOR DIGITAL TRANSMISSION OF MESSAGES

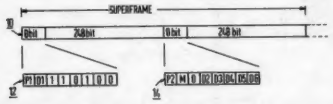
Klaus-Dieter Kahn, Germering; Friedrich Kuehne, and Hermann Barth, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,296

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238973

Int. Cl.⁴ H04L *9/00*

U.S. Cl. 375—2.1 **7 Claims**



1. In a method for digital transmission of messages in a digital radio relay system using a superframe for digital signals to permit the transmission of additional bits of data, the improvement comprising the steps of:

(a) creating a predetermined number m of superframes, wherein each superframe comprises two half-frames, each half-frame appearing in the superframe in equal, consecutive, predetermined time periods and each half frame containing one byte for additional bits of data;

(b) combining the m superframes into a multiple frame; and

(c) scrambling the digital signals, including the additional bits of data, of each superframe by adding a periodic bit pattern to the digital signals wherein the scrambling pattern has a period of the length of the multiple frame, wherein the byte of the first half frame contains at least one parity bit, one service bit and a plurality of frame alignment bits in a predetermined sequence, and the byte of the second half frame contains at least one parity bit, one marking bit, one frame alignment bit, and a plurality of service bits in a predetermined sequence.

4,606,043

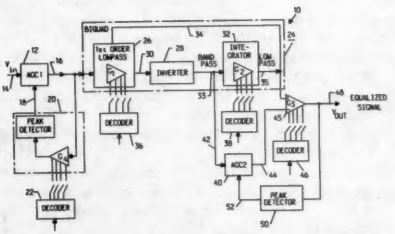
PROGRAMMABLE AUTOMATIC CABLE EQUALIZER

Thomas J. Aprille, Jr.; Yen-long Kuo, both of Andover, Mass., and Charles F. Walker, Derry, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 9, 1984, Ser. No. 658,773

Int. Cl.⁴ H04B *3/14*

U.S. Cl. 375—12 **4 Claims**



1. An automatic cable equalizer, comprising:

a first automatic gain control means having an input node, an output node, and a control node;

a first peak detector means having an input node connected to the output node of the first gain control means and having an output node connected to the control node of the first gain control means;

a biquadratic filter means having an input node, a band pass

node, and a low pass node, the input node being connected to the output node of the first gain control means;

a second automatic gain control means having an input node, an output node, and a control node, the input node being connected to the band pass node of the biquadratic filter means;

a summing means including an inverting input node, a noninverting input node, and an output node, the noninverting input node being connected to the low pass node of the biquadratic filter means and the inverting input node being connected to the output node of the second gain control means, and

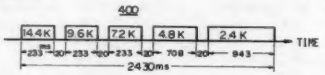
a second peak detector means having an input node connected to the output node of the summing means and having an output node connected to the control node of the second gain control means.

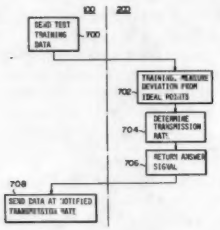
4,606,044

ADJUSTING DATA TRANSMISSION RATE BASED ON RECEIVED SIGNAL QUALITY

Shozo Kudo, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,509
Claims priority, application Japan, Mar. 9, 1983, 58-37274
Int. Cl.[4] H04J *3/22*
U.S. Cl. 375—13 **9 Claims**





1. A data transmission control method for allowing remote transceiver stations to transmit data via an analog transmission line through modems which selectively use a plurality of transmission rates, said method comprising the steps of:

(a) transmitting test training data comprised of data bursts in phase modulated form including a plurality of vectors transmitted at a plurality of data rates from a transmit station to a receive station;

(b) training a modem of said receive station in response to said test training data;

(c) selecting a transmission rate adequate for communication between the transmit and receive stations by measuring deviation of the vectors of the test training data received by the receive station from ideal predetermined values, said measuring having a degree of accuracy which is sufficient to discriminate among the deviations of test training data vectors which are all closer to the same ideal predetermined value than to any other ideal predetermined value;

(d) notifying said selected transmission rate from the receive station to the transmit station; and

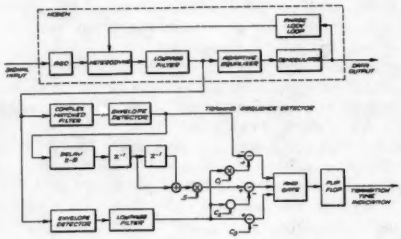
(e) transmitting data from the transmit station at said notified transmission rate.

4,606,045

METHOD AND APPARATUS FOR DETECTING AN EQUALIZER TRAINING PERIOD IN A RECEIVING-END MODEM

Chauncey S. Miller, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 404,194, Aug. 2, 1982, Pat. No. 4,462,108.
This application Mar. 16, 1984, Ser. No. 590,093
Int. Cl.[4] H03H *7/30;* H03K *5/159*
U.S. Cl. 375—13 **10 Claims**



2. For use in a receiving-end modem, a method for detection of the start of an equalizer training period, said method comprising the steps of:

filtering complex phasor signals provided by the modem, in a multistage complex matched filter having a plurality of serially connected stages that contribute to the output of said matched filter;

comparing output signals from the complex matched filter with a threshold signal; and

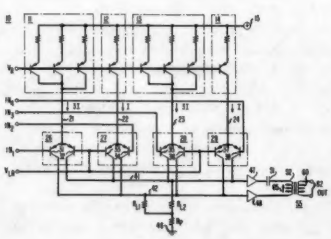
providing a modem timing signal based on the result of said comparing step wherein the output of said matched filter falls off sharply upon transition to the training sequence, when contributions from the early stages of the filter oppose contributions from the later stages.

4,606,046

CONVERTER/LINE DRIVER CIRCUIT FOR A LINE REPEATER

John J. Ludwick, Hampton, N.H., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1983, Ser. No. 565,723
Int. Cl.[4] H03H *7/30, 7/40*
U.S. Cl. 375—17 **8 Claims**



1. A converter circuit arranged for receiving N-rail logic signals and converting them into a precision N-level signal, the converter being characterized by

an output transformer having a primary winding and a secondary winding;

first and second line drivers, each having an input terminal and an output terminal, the output terminals of the first and second line drivers being coupled to the primary

winding of the output transformer in a balanced output arrangement;

an impedance including branches coupling the input terminals of the first and second line drivers to a reference potential; and

means, responsive to the N-rail logic signals, for selectively conducting, through at least two of the branches of the impedance, currents having magnitudes selected to cause the first and second line drivers to conduct various levels and polarities of current through the entire primary winding of the output transformer for producing a precision N-level signal in the secondary winding of the output transformer.

4,606,047

HIGH FREQUENCY COMMUNICATIONS

Robert G. Wilkinson, 3 Edwards Close, Waterlooville, Portsmouth P08 8RJ, Hampshire, United Kingdom

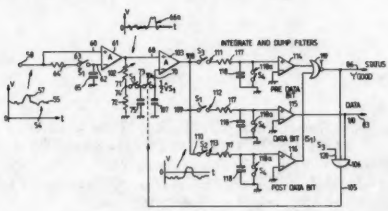
PCT No. PCT/GB82/00025, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02633, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 27, 1982, Ser. No. 432,939

Claims priority, application United Kingdom, Jan. 29, 1981, 8102714

Int. Cl.⁴ H04B *1/10*

U.S. Cl. 375—38 **12 Claims**



1. A digital communications apparatus for receiving a digitally encoded message wherein each data bit of the encoded message is transmitted as a series of sequential signals in differing frequency channels, characterised in that the apparatus comprises:

a plurality of detectors each responsive to a respective frequency channel,

means for scanning each detector output sequentially to identify individual signals,

means to sample each detector output in the bit interval before (pre-data) and in the bit interval after (post-data) the appropriate message bit time interval,

comparing means for comparing the samples with a predetermined threshold level to determine a weighting factor dependent upon noise associated with the appropriate intervening message bit time interval,

means to take the product of the signal in the intervening message bit time interval with the associated noise weighting factor to give a weighted signal, and

means to combine the weighted signals from the differing channels to reconstruct the message.

4,606,048

RADIO COMMUNICATION SYSTEM

Susumu Sasaki, Fujisawa, and Hiroshi Nakamura, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,987

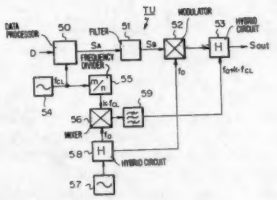
Claims priority, application Japan, Apr. 6, 1983, 58-59227; Apr. 6, 1983, 58-59228

Int. Cl.⁴ H04L *5/12, 23/02*

U.S. Cl. 375—39 **18 Claims**

1. A double sideband radio communication system operated under a quadrature amplitude modulation (QAM) method and communicating via a radio transmission path, said system comprising:

a transmitter unit, including a clock generator operating at a clock frequency f_{CL}, for modulating a digital data signal, clocked at the clock frequency f_{CL}, with a carrier signal having a carrier frequency f_O and for transmitting a modulated wave signal over the radio transmission path, said transmitter unit comprising insertion means for inserting a signal for carrier recovery into the modulated wave signal, said insertion means including a filter operatively connected to the radio transmission path and to receive the digital data signal, the signal for carrier recovery having a recovery frequency defined, using a constant k times the clock frequency, as $(f_O+k\cdot f_{CL})$, where an inequality of $0<|k|<1$ is satisfied, the filter creating zero nodes in the modulated wave signal at the recovery frequency $(f_O+k\cdot f_{CL})$ for positive and negative values of the constant k and said inserting means inserting the signal for carrier recovery in at least one of the zero nodes; and



a receiver unit for receiving a received modulated wave signal, including:

extraction means, operatively connected to the radio transmission path, for extracting received frequency components $(f_O+k\cdot f_{CL})$;

separation means, operatively connected to said extraction means, for separating received carrier frequency and received clock frequency components $(f_O+k\cdot f_{CL})$ from the received frequency components;

recovery means, operatively connected to said separation means, for recovering the clock frequency f_{CL} from the received clock frequency component $k\cdot f_{CL}$; and

reproducing means, operatively connected to said separation means, said recovery means and to receive the received modulated wave signal, for reproducing the digital data signal from the received modulated wave signal, the received carrier frequency component f_O and the clock frequency f_{CL}.

4,606,049

REMOTE TRANSMITTER CONTROL SYSTEM

Richard A. Daniel, Kingston, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1984, Ser. No. 677,434

Int. Cl.⁴ H04B *3/36*

U.S. Cl. 375—45 **5 Claims**

1. A remote transmitter control system comprising:

(a) a control station for generating a frequency modulated control signal that represents binary digital data, said control station including

(1) a variable frequency oscillator, said variable frequency oscillator providing two frequencies f_0 and f_1 that are harmonically related, in phase and f_0 is greater that f_1;

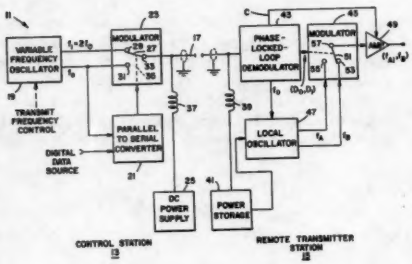
(2) a source of binary digital data;

(3) a first modulator, said first modulator being responsive to said f_0 and f_1 frequencies and to said source of binary digital data for generating a frequency modulated control

signal wherein f_0 and f_1 respectively represent the two states of said binary data; and

(b) a remote transmitter station including a control signal responsive means for receiving said frequency modulated control signal and independently generating a modulated transmission signal that represents said binary digital data, and a transmitter means, said control signal responsive means including

(1) a local oscillator, the output of said local oscillator being transmit frequencies f_A and f_B;



(2) a second modulator, said second modulator receiving the transmit frequencies f_A and f_B from said local oscillator, the output of said second modulator being applied to the input of said transmitter means; and

(3) a phase-locked-loop demodulator, said phased-locked-loop demoulator being responsive to said frequency modulated control signal for providing frequency f_0 to said local oscillator, providing control signals representing the digital data to said second modulator, and providing a power control signal to said transmitter when transmit frequencies f_A and f_B are present.

4,606,050

SYSTEM FOR DETECTING AND RECOVERING A TRANSMITTED SIGNAL

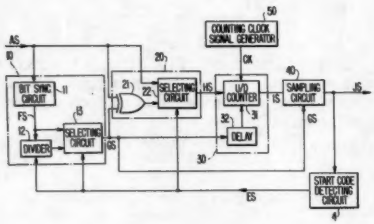
Tatsuaki Sekigawa; Akio Gotoh; Syuitsu Tsutsumi, all of Hachioji; Kuniyoshi Marui, Tokorozawa, and Naoto Honda, Hino, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 22, 1983, Ser. No. 516,359

Claims priority, application Japan, Jul. 30, 1982, 57-133568

Int. Cl.[4] H03D *3/18*

U.S. Cl. 375—75 **4 Claims**



1. A system for detecting and recovering the information encoded in a data signal having NRZ start codes and SPL information codes, wherein said NRZ start codes and said SPL information codes include a plurality of information bits, a portion of each of said bits having a determinable signal power, said system comprising:

start code detecting means for detecting the ends of said NRZ start codes and providing start code signals accordingly;

clock signal regenerating means responsive to said start code signals for receiving said data signal and regenerating a clock signal from said information bits;

converting means connected to said clock signal regenerating means and responsive to said start code signals for receiving said data signal and converting said SPL information codes to NRZ information codes;

counting clock signal generating means for generating a counting clock signal having a frequency higher than the frequency of said information bits;

selection means for selecting the plurality of information bits of one of said codes;

counting means connected to said clock signal generating means for counting said counting clock signal in a first direction when the level of the information bit selected by said selection means is at a predetermined first level and in a second direction when the information bit selected by said selection means is at a predetermined second level to produce a counting result, said counting means c[illegible]ating in said first and second direction at the same rate; and

signal reproducing means for reproducing said data signal according to said counting result of said counting means.

4,606,051

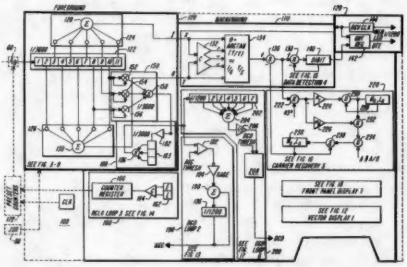
QPSK DEMODULATOR WITH I AND Q POST-DETECTION DATA CORRECTION

Steven B. Crabtree, Taft, Tenn.; Harry Yedid, Huntsville, Ala., and James B. Sherman, Chapel Hill, N.C., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Nov. 10, 1983, Ser. No. 550,868

Int. Cl.[4] H03D *3/00;* **H04L** *27/22*

U.S. Cl. 375—86 **10 Claims**



1. A quadrature phase shift keying receiver, including:

means for sampling a quadrature phase shift keyed signal according to a sample clock signal;

quadrature filter means receiving the output of the means for sampling and providing in-phase, quadrature, and error outputs;

error loop means receiving said error output from the quadrature filter means and providing an error signal;

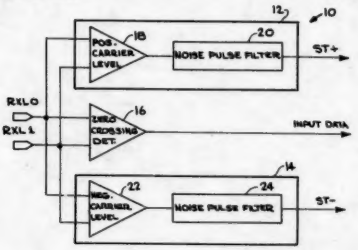
sample clock means for providing said sample clock signal to said means for sampling, the position of which being adjusted according to said error signal; and

data demodulator means for providing a data signal according to the in-phase output and the quadrature output of said quadrature filter means.

4,606,052
METHOD FOR DETECTION OF LINE ACTIVITY FOR MANCHESTER-ENCODED SIGNALS

Frederic J. Hirzel, Cupertino, Calif., and Roy J. Levy, Ashland, Oreg., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 21, 1984, Ser. No. 684,085
Int. Cl.[4] H03K *5/153;* **H03M** *5/12*
U.S. Cl. 375—87 **5 Claims**



1. A method of detecting the presence of Manchester-encoded signals on a pair of signal lines, said Manchester-encoded signals being a serial Manchester-encoded bit stream having an inter-bit period T, comprising the steps of:

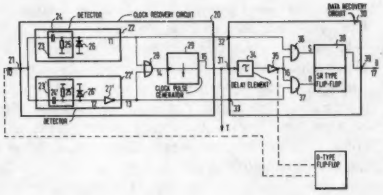
(a) detecting "line activity", when a signed voltage differential on said pair of signal lines during a first voltage transition, exceeds a first predetermined positive reference voltage or falls below a second predetermined negative reference voltage; and

(b) determining said detected line activity to be "Manchester-encoded" when said voltage differential exceeding said first predetermined reference voltage of said first voltage transition, during a second voltage transition, falls below said second predetermined reference voltage within a time-window of $\frac{3}{4}\times T$ to $1\frac{1}{4}\times T$ or when said voltage differential falling below said second predetermined reference voltage of said first voltage transition, during said second voltage transition, exceeds said first predetermined reference voltage within said time-window.

4,606,053
BI-PHASE DECODER

Wolfgang Schröder, Pforzheim, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,543
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230836
Int. Cl.[4] H03M *5/12;* **H04L** *7/02*
U.S. Cl. 375—87 **2 Claims**

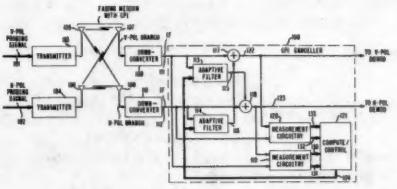


1. An evaluating circuit for an incoming data stream transmitted as a series of phase changes in two opposite directions occurring at predetermined instants of time, characterized in that it comprises a clock recovery circuit (**20**) containing one or more detectros (**22, 22'**) which generate output pulse stream(s) which represent said phase changes, the clock recovery circuit (**20**) containing a generator (**29**) which generates a clock pulse shorter than the shortest permissible distance between two valid changes of state and longer than half the longest permissible distance between two valid changes of state whenever a phase change is detected by the detector(s) (**22, 22'**) and if the preceding clock pulse has ended, and a data recovery circuit (**30**) that contains a storage element (**38**) into which data obtained in the data recovery circuit from the said output pulse stream(s) emerging from said detector(s) is transferred at each clock pulse generated by said clock recovery circuit, the storage element (**38**) being an SR flip-flop which is set via its set input S when a phase change occurs in one direciton (e.g., as a voltage rise) at an instant determined by the clock signal as the succession of clock pulses, and which is reset via its reset input R when a phase change occurs in the other direction (e.g., as a voltage drop) at an instant determined by the clock signal.

4,606,054
CROSS-POLARIZATION INTERFERENCE CANCELLATION

Noach Amitay, Tinton Falls, and Lawrence J. Greenstein, Edison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 21, 1985, Ser. No. 704,069
Int. Cl.[4] H04B *1/10*
U.S. Cl. 375—102 **11 Claims**



11. A method of cancelling cross-polarization interference in first and second incoming signals having polarizations which are orthogonal to one another, said method comprising the steps of

coupling each of said incoming signals through a respective adaptive filter, each having a frequency response determined by a plurality of weighting coefficients,

adding the filtered first incoming signal and said second incoming signal and adding the filtered second incoming signal and said first incoming signal to form output signals, and

adjusting said weighting coefficients of said adaptive filters in response to said output signals and said incoming signals at selected times.

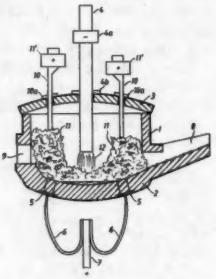
4,606,055
DC ARC FURNACE HAVING STARTING EQUIPMENT

Erik Lassander, Viken, and Sven-Einar Stenkvist, Västerås, both of Sweden, assignors to Asea AB, Västerås, Sweden

Filed Aug. 9, 1984, Ser. No. 639,145
Claims priority, application Sweden, Aug. 12, 1983, 8304384
Int. Cl.[4] H05B *7/00*
U.S. Cl. 373—108 **3 Claims**

1. A DC furnace including a hearth for containing a melt and having at least one melt electrode which becomes effective when covered by a melt, an enclosure for the hearth including a roof over the hearth, at least one arcing electrode depending downwardly through the roof for melting a charge of solid metal on the hearth, and at least two starting electrodes through which electric power is transmitted to the charge of solid metal until it is to cover the melt electrode, the starting electrodes depending downwardly through the roof and being

horizontally offset from the arcing electrode and moved to downward positions to press on the charge of solid scrap on the hearth until the charge is melted down to cover the melt electrode and thereafter moved to upward positions clear from the furnace interior, said starting electrodes being made of metal and each being of smaller diameter than is adequate to



singly carry the electric power required to power the arcing electrode, the starting electrodes being electrically interconnected in parallel so that together they can carry said power, the roof having substantially gas-tight seals through which the starting electrodes vertically slidingly depend, and said starting electrodes being long enough to remain in said seals when the starting electrodes are slid to their said upward positions.

4,606,056

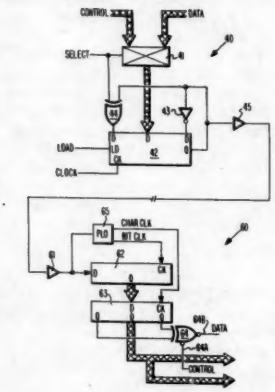
METHOD OF ENCODING AND SERIALLY TRANSMITTING SELF-CLOCKING DATA AND CONTROL CHARACTERS

Ronald S. Perloff, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 4, 1985, Ser. No. 698,138

Int. Cl.[4] **H04L** *7/02, 25/38;* **H04J** *3/06*

U.S. Cl. 375—110 **10 Claims**



1. A method of sending a plurality of self-clocking data characters and control characters in a sequence from a first communication node to a second node, including the steps of:

loading the characters of said sequence into a parallel-serial shift register;

inserting a one bit before and a one bit behind each loaded control character which is immediately preceded by a zero bit of a previously loaded character, and a zero bit before and a zero bit behind each remaining control character;

inserting a one bit before and a zero bit behind each loaded data character which is immediately preceded by a zero bit of a previously loaded character, and a zero bit before and a one bit behind each remaining data character; and

serially transmitting each loaded character with its inserted bits.

4,606,057

ARRANGEMENT FOR CHECKING THE COUNTING FUNCTION OF COUNTERS

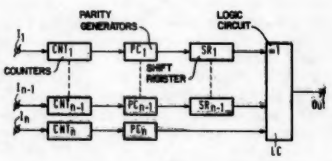
Johannes van Baardewijk; Johan E. A. Hartman, and Nicolaas Bohlmeyer, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,497

Claims priority, application Netherlands, Aug. 1, 1983, 8302722

Int. Cl.[4] **H03K** *21/40*

U.S. Cl. 377—28 **1 Claim**



1. A logical subsystem for checking the counting function of a number of counters n, where ($n \geq 2$), which counters are operated isochronously, comprising:

a number n of counters, where $n \geq 2$;

a number n of parity generators, where $n \geq 2$;

each of said parity generators being connected to one of said counters and each of said counters being connected to one of said parity generators;

each of said parity generators having means for generating the parity of the instantaneous counting position of the counter to which it is connected;

$(n-1)$ of said parity generators being connected to counters having the highest counting positions;

$(n-1)$ shift registers being connected to said $n-1$ parity generators, such that each of said shift registers shifts the parity of the parity generator to which it is connected by a number of positions corresponding to the difference between the counting position of the counter to which it is connected and the counting position of the counter having the lowest counting position;

the output of each of said $(n-1)$ shift registers, and the output of the parity generator connected to said counter having the lowest counting position being connected to a logic circuit such that said logic circuit outputs a first signal if the same parity is presented to all its inputs, and outputs a second signal if the parity presented to one input differs from the parity presented to at least one other input.

4,606,058

PROCESS FOR GENERATING CONTROL SIGNALS IN A PREDETERMINABLE PHASE POSITION, CIRCUIT ARRANGEMENT FOR EFFECTUATING THE PROCESS AND UTILIZATION OF THE CIRCUIT ARRANGEMENT

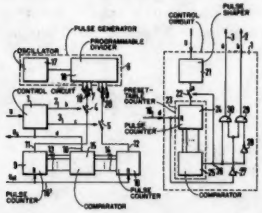
Tilmann Kruger, Neunkrichen; Erwin Potthof, Rothenbach, and Manfred Barwig, Wendelstein, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Jun. 8, 1984, Ser. No. 618,488

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321530

Int. Cl.[4] G04F *1/00*; H03K *5/153, 17/28*

U.S. Cl. 377—39 12 Claims



1. In a process for the generation of control signals in a presettable phase position relative to an alternating voltage with an at least a short term-stable frequency through the utilization of a higher-frequencied, at least short term-stable auxiliary timing pulse; the improvement comprising: determining the interval of a pregivable number of periods of the alternating voltage; counting the periods of a first auxiliary time pulse occurring during this interval; counting the periods of a second auxiliary timing pulse of different frequency which are correlated in time with the first auxiliary timing pulse; and generating the control signal at the coincidence of the period numbers of the first and second timing pulse.

4,606,059

VARIABLE FREQUENCY DIVIDER

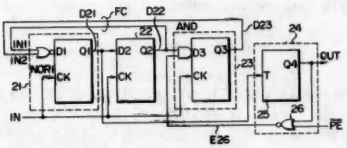
Yoshio Oida, Funabashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1984, Ser. No. 592,849

Claims priority, application Japan, Mar. 31, 1983, 58-55964

Int. Cl.[4] H03K *21/06*

U.S. Cl. 377—47 18 Claims



1. A variable frequency divider adapted to receive a clock signal and a division ratio instruction signal, said variable frequency divider comprising:

feedback shift register means, responsive to said clock signal and provided with a feedback gate having feedback input terminals, for providing first output data according to the logical state of said feedback input terminals and said clock signal;

delay shift register means, responsive to said clock signal and coupled to said feedback shift register means, for delaying said first output data by one clock period of said clock signal, and for providing second output data;

control shift register means, responsive to said clock signal and provided with a control gate having first and second control input terminals receiving, respectively, a control signal and said second output data, for providing third output data according to the logical state of said control input terminals and said clock signal;

feedback circuit means, coupled to said feedback input terminals and to said control shift register means, for feeding said second and third output data directly back to said feedback input terminals; and

expander means, coupled to said feedback shift register means and to said first control input terminal of said control gate, for providing said control signal according to said first output data and said division ratio instruction signal.

4,606,060

CHARGE COUPLED DEVICE (CCD) INPUT CIRCUIT OPERATING ACCORDING TO THE FILL AND SPILL PRINCIPLE

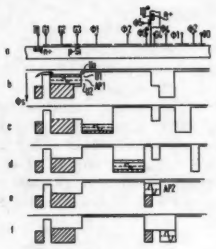
Heiner Klar, and Manfred Mauthe, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 479,852, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 62,152, Jul. 30, 1979, abandoned. This application Feb. 11, 1985, Ser. No. 699,505

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836473

Int. Cl.[4] G11C *19/28*; H01L *29/78*

U.S. Cl. 377—60 1 Claim



1. In a charge-coupled device of the type having a substrate and an input which operates in accordance with the fill and spill principle in which a charge is moved over a barrier from one potential well to another, and which has an input diode, a plurality of linearly aligned input electrodes including first, second and third input electrodes, and a plurality of linearly aligned shift electrodes including first, second, third and fourth shift electrodes, the improvement therein comprising:

said first and second shift electrodes linearly mounted in a first direction and said first and second shift electrodes each having surface areas which are equal to the sum of the surface areas of said second input electrode and of said third input electrode; a distributor electrode aligned with and mounted adjacent to said second shift electrode for receiving a clock pulse;

a barrier electrode linearly mounted between said distributor electrode and said third shift electrode for receiving a fixed potential corresponding to half the clock-pulse amplitude; the surface area of said distributor electrode and the magnitude of the barrier producible by said barrier electrode being selected such that an undesired d.c. component of a signal charge remains beneath the distributor electrode and the a.c. component lies above the barrier; a transverse current path transverse to said first direction and having a drain-off gate for receiving a clock pulse and a drain-off diode connected to said substrate between said distributor and barrier electrodes for drawing off the d.c. component; said fourth shift electrode, and said third and

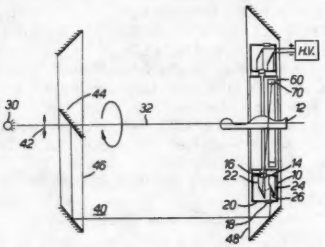
fourth shift electrodes linearly mounted in said first direction following said barrier electrode and arranged adjacent each other and on the side thereof opposite said distributor electrode for receiving shift pulses fifth and sixth shift electrodes and said third and fourth shift electrodes each having a greater surface area than the surface areas of said fifth and sixth shift electrodes.

4,606,061

LIGHT CONTROLLED X-RAY SCANNER

Krishnamurti Ramamurti, Pittsburgh, Pa., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 28, 1983, Ser. No. 566,158
Int. Cl.[4] H01J *35/06, 35/00;* **G01N** *23/00*
U.S. Cl. 378—10 **11 Claims**



1. An X-ray scanner comprising:

a. a source of X-rays, comprising an annular chamber for at least partially surrounding an object under observation, an X-ray penetrable window in said chamber opening toward said object along a circumferential surface of said chamber, a light penetrable window opening along a circumferential surface of said chamber, an anode extending annularly around the interior of said chamber, a cathode extending annularly around the interior of said chamber in spaced apart relation to said anode and with one surface of said cathode located with relation to said light penetrable window to receive light therethrough;

b. a light source;

c. optical means for selectively directing light from said light source through said light penetrable window onto portions of said one surface of said cathode such that said light scans said cathode to produce electrons therefrom;

d. means for providing a high-voltage potential between said cathode and anode to accelerate said electrons from said portions of said cathode toward corresponding portions of said anode to produce X-rays at said corresponding portions of said anode, at least some of said X-rays being directed through said X-ray penetrable window toward said object.

4,606,062

X-RAY COMPUTED TOMOGRAPHIC APPARATUS

Yasuo Saito, Ootawara, Japan, assignor to Kabushiki Kaishi Toshiba, Japan

Filed Nov. 16, 1984, Ser. No. 672,198
Claims priority, application Japan, Nov. 18, 1983, 58-216006
Int. Cl.[4] A61B *6/00;* **G03B** *41/16;* **H05G** *1/60*
U.S. Cl. 378—13 **6 Claims**

1. An X-ray computed tomographic apparatus comprising:

X-ray generating means, having an X-ray tube and a plurality of X-ray spot sizes to be selected, for generating a fan-shaped X-ray beam onto an object to be examined;

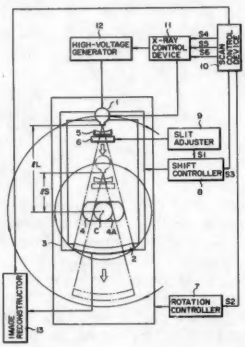
setting means having at least means for setting an X-ray tube voltage of said X-ray generating means, means for setting a start/stop of X-ray irradiation by said X-ray generating means, and means for setting an X-ray spot size of said X-ray generating means;

an X-ray detector having a position sensitivity in at least one direction;

rotating means for supporting said X-ray generating means and said X-ray detector to oppose each other and for rotating said X-ray generating means and said X-ray detector about an axis therebetween at which the object is arranged;

shift adjusting means for integrally shifting said X-ray generating means and said X-ray detector with respect to the axis which is a center of rotation of a rotational movement provided by said rotating means, and for adjusting a distance between said X-ray generating means and said X-ray detector so as to match a width of the fan-shaped X-ray beam with a range of the object;

scan control means for controlling said rotating means and said setting means so as to rotate said X-ray generating means and said X-ray detector around the object and for irradiating



the object with the fan-shaped X-ray beam for each predetermined projection angle; and

image reconstructing means for acquiring projection data obtained from said X-ray detector upon irradiation of the fan-shaped X-ray beam at various angles, said means for setting the X-ray spot size being interlocked with said shift adjusting means so as to select, when said X-ray generating means and the object are close to each other, a spot size smaller than that in the case wherein said X-ray generating means and the object are separated from each other, and said means for setting the tube voltage being interlocked with said shift adjusting means so as to select, when said X-ray generating means and the object are close to each other, a tube voltage higher than that in the case wherein said X-ray generating means and the object are separated from each other.

4,606,063

SHUTTER ARRANGEMENT FOR USE IN INTRA-ORAL RADIOGRAPHY

Nils Berghagen, Godsii garvägen 47, S-121 63 Johanneshov, Sweden

PCT No. PCT/SE83/00038, § 371 Date Sep. 25, 1984, § 102(e) Date Sep. 25, 1984, PCT Pub. No. WO84/03033, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 3, 1983, Ser. No. 662,402
Int. Cl.[4] G03C *9/00*
U.S. Cl. 378—41 **3 Claims**

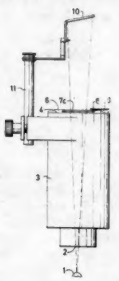
1. A method of creating stereophotographic X-ray pictures of a tooth for dental diagnosis purposes including the steps of:

positioning a tooth on a bite plate with the tooth lying on a first axis extending from the tooth through a shutter aperture of a shutter and an X-ray radiation screening and directing tube to a puntiform X-ray source,

taking an X-ray picture of the tooth along said first axis,

transversely moving the bite plate relative to the tube,

moving the shutter aperture transversely in the same direction as the bite plate, but a shorter distance to align the shutter aperture along a second axis between the bite plate and the puntiform X-ray source, which second axis extends at an angle relative to the first axis, and



taking another X-ray picture of the tooth to provide a pair of X-ray pictures which can be used to provide a stereographic view of the tooth.

4,606,064

RADIODIAGNOSTIC SYSTEM WITH A FLAT PICTURE INTENSIFIER

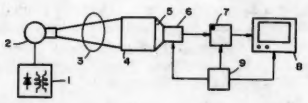
Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,165

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319309

Int. Cl.[4] H05G *1/64*

U.S. Cl. 378—99 **6 Claims**



1. In a diagnostic x-ray device for producing x-ray images having an x-ray tube, a panel type x-ray image intensifier coupled to a television camera system producing a video signal, a central unit and a monitor connected to the television camera system to receive the video signal for displaying the x-ray images, wherein the image displayed on the monitor comprises pixels arranged in rows and columns, the improvement comprising an image storage device connected to the television camera system and to the monitor, which is coupled by its clock input with the central unit, setting means provided at the central unit which act on the central unit such that the vertical-to-horizontal frequency ratio of the television camera system is reduced by a factor N, while the ratio of the pixel clock frequency of the image storage device to the horizontal frequency is increased by the same factor N and the read-in process into the image storage device is delayable in directions of the rows and columns of the monitor image, so only a selectable image detail is displayable on the monitor.

4,606,065

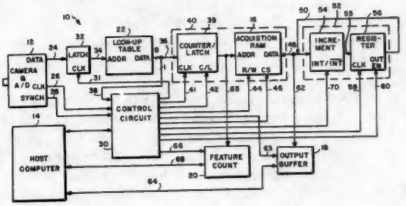
IMAGE PROCESSING-SYSTEM

Mirza R. Beg, Andover, and Julius Perl, Burlington, both of Mass., assignors to Imaging Technology Incorporated, Woburn, Mass.

Filed Feb. 9, 1984, Ser. No. 578,687

Int. Cl.[4] G06K *9/46*

U.S. Cl. 382—18 **2 Claims**



1. A combination circuit for performing feature-identification and histogram functions on the output of an imaging device that produces sequences of digital level signals representing the intensity levels of picture elements in an image and clock signals indicating when a new picture element is represented by the current level signal, the combination circuit comprising:

A. a programmable encoder, operable by application of programming signals thereto to establish a correspondence between digital level signals and digital code signals, for receiving level signals and producing in response the corresponding code signals, each code signal indicating whether a picture element whose intensity is represented by the corresponding level signal has a selected feature when the combination circuit performs feature identification and indicating the sorting bin to which a picture element whose intensity is represented by the corresponding level signal belongs when the combination circuit performs the histogram function;

B. a counter connected to receive the code signals, operable by application of load signals thereto to store the values of the code signals, and operable by application of count signals thereto to increment the value stored therein, for producing counter signals representing the stored value;

C. a memory circuit including a plurality of memory locations, connected to receive the counter signals, operable by application of write signals thereto to store in memory locations indicated by the counter signals the values of data signals applied thereto, and operable by application of read signals thereto to produce memory signals having the values stored in the memory locations indicated by the counter signals;

D. an increment circuit for storing an index value, the increment circuit being operable by application of mode-select signals thereto to assume one of a feature-identification state and a histogram state, connected to receive the memory signals and to apply data signals to the memory circuit, operable in the feature-identification state by application of increment signals thereto to increment the index value stored therein and produce data signals having the resultant value, and operable in the histogram state by application of increment signals thereto to increment the values of the received memory signals and produce data signals having the resultant values;

E. a control circuit selectively operable in a feature-identification mode and in a histogram mode, connected for reception of the clock signals and for application of load and count signals to the counter, read and write signals to the memory circuit, and mode-select and increment signals to the increment circuit, for,

i. in the feature-identification mode, applying mode-select signals to the increment circuit to cause it to assume its

feature-identification mode, applying increment signals to the increment circuit in response to the clock signals to cause it to apply data signals to the memory that indicate the position of the current picture element, receiving code signals from the encoder, applying a count signal to the counter whenever the code signal indicates that the level signal has the intended feature so that the counter signal represents the address of the next location in the memory, and operating the memory to cause it to store in the location indicated by the counter signal the value represented by the data signal from the increment circuit, the memory thereby storing in successive locations the positions of picture elements having the intended feature, and

ii. in the histogram mode, applying mode-select signals to the increment circuit to cause it to assume its histogram state, applying load signals to the counter circuit in response to the clock signals to cause it to store the code signals and produce counter signals indicating the bins to which the levels indicated by the level signals belong, operating the memory to cause it to produce memory signals representing the current value in the memory location addressed by the counter signals, applying increment signals to the increment circuit to cause it to increment the value represented by the memory signals and apply data signals to the memory that represent the resultant value, and applying write signals to the memory to cause it to store the incremented value in the location addressed by the counter signals, the memory thereby storing in memory locations representing sorting bins the number of picture elements that belong to those bins.

4,606,066

PROGRAMMABLE IMAGE PROCESSOR

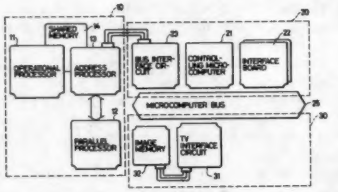
Seiji Hata, Fujisawa; Hiroshi Horino, and Akira Miyakawa, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,786

Claims priority, application Japan, Sep. 9, 1982, 57-155987; Oct. 8, 1982, 57-176277

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—41 **31 Claims**



1. A programmable image processor, comprising:

an image memory for digitizing and storing image data;

an address processor adapted to effect addressing with respect to desired pixels on said image memory and draw out the corresponding pixel data on desired portions;

a shared memory into which pixel data on said desired portions are successively written by said address processor; and

an operational processor adapted to receive the pixel data stored in said shared memory for each of said desired portions and successively effect necessary scanning and processing of the pixel data;

said shared memory being simultaneously accessible by said address processor and said operational processor to perform one read and one write operation on said pixel data during each processing cycle of said address processor and operational processor.

4,606,067

DEVICE FOR RECOGNIZING FAR-AWAY ELECTRO-MAGNETICALLY RADIATING OBJECTS

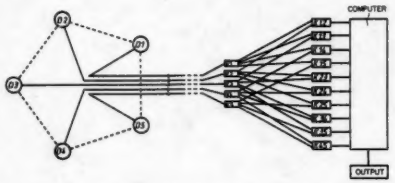
Valentin Ernst, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Gerätetechnic GmbH, Überlingen, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,030

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203528

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—42 **11 Claims**



1. Method of recognizing, at distances beyond the resolution of optical imaging systems, randomly shaped objects from which electromagnetic radiation emanates, comprising the steps of

(a) two-dimensionally arranging, in fixed relative positions, a plurality of detectors responding to radiation of an object, each of the detectors representing a discrete point of no particular shape,

(b) providing a known object at a large distance from said detectors,

(c) exposing each detector directly to radiation emanating from said known object toward said detector, whereby said detectors provide first signals indicative of said radiation from the known object,

(d) correlating said first signal provided by each detector with each one of first signals provided by a plurality of associated other ones of said detectors to provide a first pattern of correlation signals indicative of said known object,

(e) storing said first pattern of correlation signals,

(f) exposing each detector directly to radiation emanating from an unknown object towards said detector, whereby said detectors provide second signals indicative of said radiation from the unknown object,

(g) correlating said second signal provided by each detector with each one of second signals provided by said plurality of associated other ones of said detectors to provide a second pattern of correlation signals indicative of said unknown object, and

(h) comparing said second pattern with said stored first pattern to determine whether said known and unknown objects are similar.

4,606,068

VIDEO COMPRESSOR FOR VIDEO FORMAT UNIT

Richard K. Habitzreiter, Dallas; Robert V. B. Pinney, Jr., Fort Worth, and Mark S. Woolston, Flower Mound, all of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Aug. 13, 1984, Ser. No. 640,348

Int. Cl.⁴ G06K *9/62*

U.S. Cl. 382—56 **2 Claims**

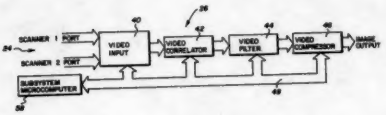
1. A video compressor for use in an image processing system comprising:

means for detecting a data image pattern and for generating a code representing the detected data image pattern;

means for counting the number of times a data image pattern is detected and for generating a repeat count;

means for storing said code in a fixed sized bit field;

means for storing said repeat count in a variable sized bit field; and



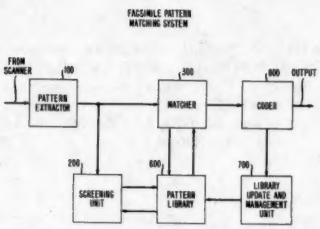
means for merging said fixed sized bit field and said variable sized bit field into a continuous bit field.

4,606,069

APPARATUS AND METHOD FOR COMPRESSION OF FACSIMILE INFORMATION BY PATTERN MATCHING

Ottar Johnsen, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 10, 1983, Ser. No. 503,333
Int. Cl.[4] H04N *1/40*; G06K *9/68*
U.S. Cl. 382—56 **16 Claims**



1. A method of encoding a facsimile image including a plurality of picture elements (pixels) which lie along a series of scan lines, comprising the steps of:

(a) comparing incoming patterns contained in portions of said image with a sequence of previously processed patterns stored in a library to determine the existence of a match between said incoming and stored patterns,

(b) encoding, for each incoming pattern which matches a stored pattern, its location in said image and an identification number associated with said stored pattern, said encoding step being performed irrespective of whether said each incoming pattern intersects a border between said adjacent portions of said image, and

(c) storing patterns in said library for which no matching pattern is found,

wherein said storing step includes

(d) arranging said patterns so that frequently occurring patterns are processed in said comparing step before infrequently occurring patterns.

4,606,070

COMBINED WIND SCREEN AND BEACH BAG

Robert A. Schachter, 130 Elwa Pl., West Palm Beach, Fla. 33405

Filed Aug. 24, 1984, Ser. No. 643,919
Int. Cl.[4] B65D *30/00*
U.S. Cl. 383—4 **6 Claims**

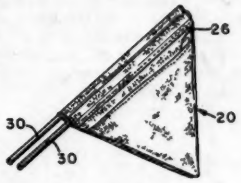
1. A combined windscreen and beach bag, comprising:

a flexible panel with side edges and opposite ends, foldable along a line intermediate the opposite ends;

stake means at the opposite ends for supporting the panel as a windscreen with the opposite ends perpendicular to a surface, the stake means being substantially parallel to the opposite ends and extending beyond a side edge of the panel to form handle means for carrying the panel as a beach bag;

at least one pocket formed in the panel substantially coextensive with approximately one-half of the panel, the pocket having an opening directed towards one of the ends;

the beach bag defined by two diagonal folds in which the stake means are substantially aligned with a side edge, and



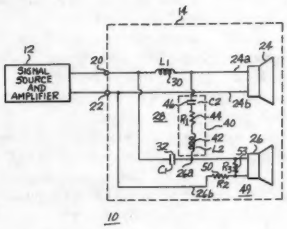
a further fold formed when the stake means are juxtaposed, the beach bag so defined having at least three substantially triangular pockets opening towards said stake and handle means, whereby said beach bag can be quickly and easily formed with articles fitting within and projecting out of the at least one pocket formed in the panel, and whereby articles fitting within and projecting out of all of the triangular pockets can be easily carried.

4,606,071

LOUDSPEAKER SYSTEM UTILIZING AN EQUALIZER CIRCUIT

Lahroy A. White, Jr., 4008 Pinehurst, Amarillo, Tex. 79109

Filed Aug. 13, 1984, Ser. No. 639,800
Int. Cl.[4] H04R *3/14*
U.S. Cl. 381—99 **7 Claims**



1. A loudspeaker system comprising:

first and second input terminals adapted to receive an electrical signal to be transduced by said loudspeaker system;

a low-frequency driver having first and second input contacts;

a high-frequency driver having first and second input contacts;

a first inductor coupled between said first input terminal and said low-frequency driver first contact, said first inductor having a predetermined inductance L_1 selected to attenuate signals above a predetermined first frequency;

a first capacitor coupled between said first input terminal and said high-frequency driver first contact, said first capacitor having a predetermined capacitance C_1 selected to attenuate signals below a predetermined crossover frequency; and

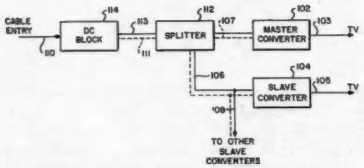
an equalizer circuit comprising a series connection of a second inductor, having an inductance L_2, a second capacitor, having a capacitance C_2, and a resistor, having a resistance R_1, said series connected equalizer components being coupled between said low-frequency driver first

contact and said high frequency driver first contact, said equalizer circuit exhibiting a predetermined impedance characteristic selected to compensate for resonant effects in said loudspeaker system.

4,606,072
MASTER/SLAVE CONVERTER SYSTEM

Thomas F. Martin, Richardson; Robert W. Storey, Dallas; Carl F. Schoenenberger, Carrollton, and John S. Chenoweth, Denton, all of Tex., assignors to Tocom Inc., Irving, Tex.

Continuation of Ser. No. 503,397, Jun. 10, 1983, abandoned. This application Oct. 8, 1985, Ser. No. 786,144
Int. Cl.[4] H04H *1/04*; H04N *7/00*
U.S. Cl. 455—4 **15 Claims**



3. In a communications system having a transmitter at a central office for transmitting data signals over a communications link to a user's location where the data signals are received and tuned for use thereat, the combination comprising:

a master converter capable of tuning the data signals at the user's location having supervisory means for generating a master control signal,

at least one slave converter capable of tuning the data signals in communication with the master converter having disabling means responsive to the master control signal from the master converter for disabling the slave converter in response to the absence of communication of the master control signal to the slave converter,

splitter means in communication with the master converter and the slave converter for passing the data singals from the central office to the master and slave converters and wherein said master converter and slave converter are connected by the splitter means,

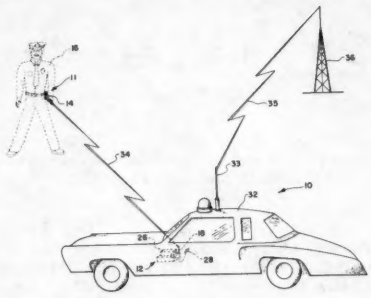
whereby said converters are arranged in an interdependent relationship wherein said master converter is independently capable of tuning the data signals and said slave converter is capable of tuning the data signals only upon communication of said master control signal.

4,606,073
ASSISTANCE SUMMONING SYSTEM

Alfred Z. Moore, 210 N. 2nd St., Smithfield, N.C. 27577

Continuation-in-part of Ser. No. 13,013, Feb. 21, 1979, abandoned. This application Aug. 29, 1980, Ser. No. 182,443
Int. Cl.[4] H03B *1/00*
U.S. Cl. 455—89 **13 Claims**

1. An assistance summoning system comprising: a two-way communication type transceiver having a transmitter section; a receiver/message component including a receiver section and a programmable message section; means operatively connecting said receiver section to said programmable message section; means for operatively connecting said programmable message section to said transmitter section of said transceiver whereby information from said programmable message section can be fed into and thus transmitted by said transceiver upon the happening of a predetermined programmed event; a control means within the confines of the assistance summoning system for causing a programmed message from said message section to be automatically transmitted a selected number of times by said transceiver after the elapse of a selected length of time from the activation of said control means; and a security code receiving means operatively connected to said summoning system to allow an authorized user to operate the system

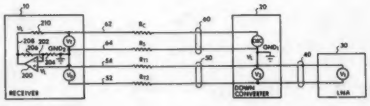


with any unauthorized use causing the system to automatically transmit a programmed message.

4,606,074
AUTOMATIC VOLTAGE LINE LOSS COMPENSATION CONTROL FOR AN ANTENNA RECEIVER

Charles E. Rodeffer, Evergreen, Colo., assignor to Winegard Company, Burlington, Iowa

Filed Jun. 14, 1984, Ser. No. 621,238
Int. Cl.[4] H04B *1/18, 1/26*
U.S. Cl. 455—131 **4 Claims**



4. An automatic control for compensating for the voltage drop, (V_L) between an antenna receiver (**10**) and an interconnecting down converter (**20**), said receiver (**10**) having a first cable (**60**) providing a tuning voltage, (V_T), over one line (**62**) and providing receiver ground (GND2) over a second line (**64**) to the down converter ground (GND1), said automatic compensation control comprising:

means (**200**) being connected to said down converter ground (GND1) carrying said voltage drop (V_L) above said ground (GND2) from said down converter (**20**) for delivering said voltage drop (V_L) back to said tuning voltage line (**62**) so that the value of said voltage drop (V_L) is added to the tuning voltage (V_T) to fully compensate for said voltage drop (V_L).

4,606,075
AUTOMATIC GAIN CONTROL RESPONSIVE TO COHERENT AND INCOHERENT SIGNALS

Bruce C. Eastmond, Downers Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

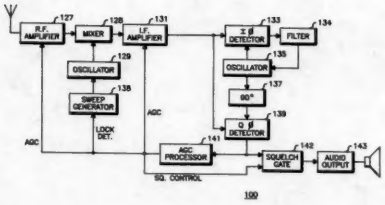
Continuation of Ser. No. 534,512, Sep. 21, 1983, abandoned. This application Dec. 18, 1985, Ser. No. 814,518
Int. Cl.[4] H04B *1/16*
U.S. Cl. 455—234 **16 Claims**

1. A method of generating an Automatic Gain Control (AGC) signal in a phase-locked receiver from a quadrature signal that is of appropriate bandwidth and that contains phase components that are both phase-coherent and phase-incoherent with the quadrature signal comprising the steps of:

selectively amplifying the quadrature signal such that relatively high frequency, phase-incoherent signals are amplified while relatively low frequency, phase-coherent sig-

nals are relatively unamplified; detecting the selectively amplified signal; and

generating an AGC signal that is, at least, a function of the difference between the detected selectively amplified signal and a reference signal,



whereby the AGC signal is generated for both phase-coherent and phase-incoherent signals and whereby the relative amplitude of the phase-coherent and phase-incoherent signals may be maintained.

4,606,076

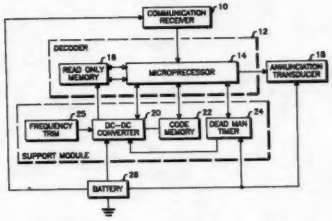
COMMUNICATION RECEIVER SYSTEM HAVING A VOLTAGE CONVERTER WITH AN OPERATING FREQUENCY BELOW THE RECEIVER IF

Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1985, Ser. No. 689,368

Int. Cl.[4] H04B *1/16, 1/10;* **H02M** *3/325*

U.S. Cl. 455—343 **5 Claims**



1. A communication receiver system for receiving coded signals and of the type having at least one predetermined intermediate frequency (IF) signal, comprising:

decoder means for detecting and decoding received coded signals;

voltage converter means, connected to said decoder means, for generating a voltage greater than a supply voltage of said communication receiver system, and operating at a frequency below the frequency of the IF signal; and

frequency trim circuit means, connected to said voltage converter means, for controlling the operating frequency of said voltage converter means whereby interference with said IF signal is prevented.

DESIGN PATENTS

GRANTED AUG. 12, 1986

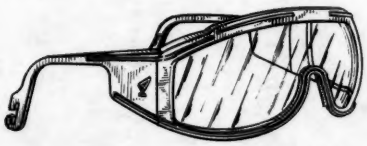
ERRATA

For CLASS	See PATENT NO.
D03–101	285,104

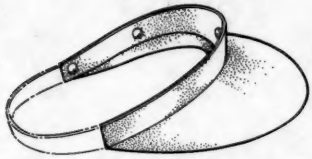
DESIGNS

AUGUST 12, 1986

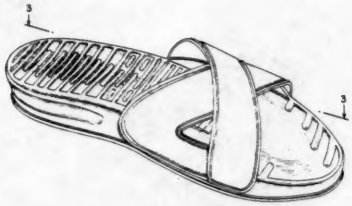
285,020
SPORT GOGGLE
Johann Schmidthaler, Linz, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Feb. 22, 1983, Ser. No. 468,347
Claims priority, application Austria, Sep. 8, 1982, 23,087
Term of patent 14 years
U.S. Cl. D2—234



285,021
EYE SHADE
Jean E. Chandler, 10214 Bushman Dr., #10112, Oakton, Va. 22124
Filed Oct. 24, 1983, Ser. No. 544,479
Term of patent 14 years
U.S. Cl. D2—241



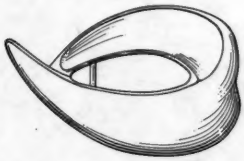
285,022
SANDAL
Michael M. Schornstein, Memphis, Tenn., assignor to Scholl, Inc., Memphis, Tenn.
Filed Apr. 20, 1984, Ser. No. 602,240
Term of patent 14 years
U.S. Cl. D2—283



285,023
SHOE SOLE
James K. Tong, Beaverton, and Jerry D. Stubblefield, Portland, both of Oreg., assignors to Pensa, Inc., Portland, Oreg.
Filed Feb. 4, 1986, Ser. No. 825,979
Term of patent 14 years
U.S. Cl. D2—320

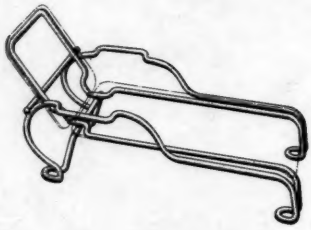
285,024
TWO-HAND MITTEN
Jeffrey H. Finkle, 2 Conklin La., Huntington, N.Y. 11743
Filed Apr. 10, 1984, Ser. No. 598,584
Term of patent 14 years
U.S. Cl. D2—366

285,025
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 29, 1984, Ser. No. 676,014
Term of patent 14 years
U.S. Cl. D2—422

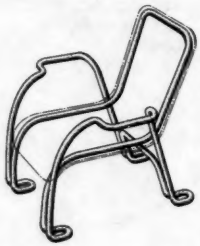


285,026
VIDEO CASSETTE STORAGE CASE
Johan H. E. Oskamp, Geldrop, Netherlands, assignor to Eindhoven Druk B.V., Eindhoven, Netherlands
Filed Feb. 27, 1984, Ser. No. 584,279
Claims priority, application Hague, Aug. 30, 1983, DM-002831
Term of patent 14 years
U.S. Cl. D3—35

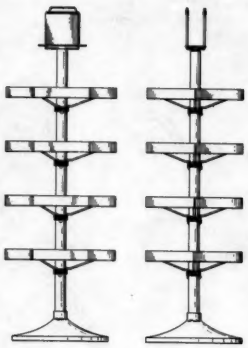
285,027
CHAISE FRAME
William McBride, 1110 W. Barry St., Chicago, Ill. 60657
Filed Jan. 25, 1984, Ser. No. 573,979
Term of patent 14 years
U.S. Cl. D6—361

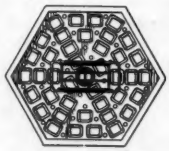


285,028
CHAIR FRAME
William McBride, 1110 W. Barry St., Chicago, Ill. 60657
Filed Jan. 25, 1984, Ser. No. 573,977
Term of patent 14 years
U.S. Cl. D6—375



285,029
DISPLAY STAND WITH ROTATABLE SHELVES
Norton J. Cooper, New York, N.Y., assignor to Chatam International Incorporated, Philadelphia, Pa.
Filed Jan. 9, 1984, Ser. No. 568,992
Term of patent 14 years
U.S. Cl. D6—461





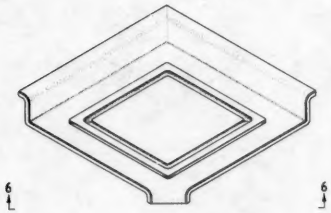
285,030
SUPPORT BRACKET FOR MULTIPLE BABY RATTLES
Arieh Solomon, 49, Hasaifan Street, Ramat Hasharon 47 248, Israel
Filed Sep. 5, 1984, Ser. No. 647,699
Term of patent 14 years
U.S. Cl. D6—491

285,031

CORNER UNIT FOR A KITCHEN COUNTERTOP

Robert O. Clark, Homewood, Ill., assignor to Plastic Clad Corporation, Birmingham, Ala.

Filed Feb. 6, 1984, Ser. No. 577,162
Term of patent 14 years
U.S. Cl. D6—511



285,032

BEVERAGE TUMBLER OR THE LIKE

Patrick R. Alonzo, 2361 W. Birchwood Ave., Milwaukee, Wis. 53221

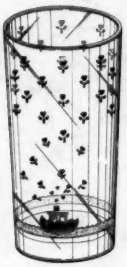
Filed Oct. 31, 1983, Ser. No. 547,390
Term of patent 14 years
U.S. Cl. D7—6

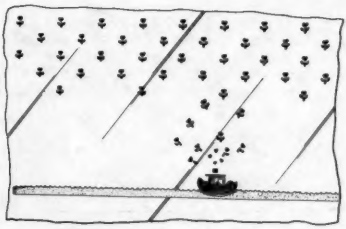
285,033

TUMBLER OR SIMILAR ARTICLE

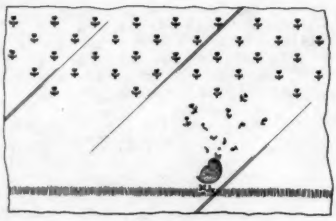
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 464,750, Feb. 7, 1983. This application Apr. 25, 1985, Ser. No. 727,094
Term of patent 14 years
U.S. Cl. D7—6





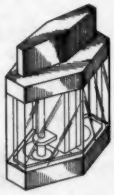
285,034
TUMBLER OR SIMILAR ARTICLE
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 464,750, Feb. 7, 1983. This application May 10, 1985, Ser. No. 732,713
Term of patent 14 years
U.S. Cl. D7—8



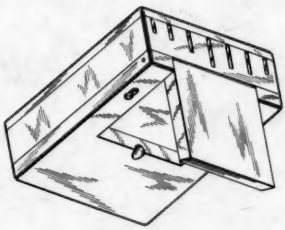
285,035
DRINKING CUP
Vladislav P. Petrasek, P.O. Box 113, El Segundo, Calif. 90245
Filed May 14, 1984, Ser. No. 609,870
Term of patent 14 years
U.S. Cl. D7—9

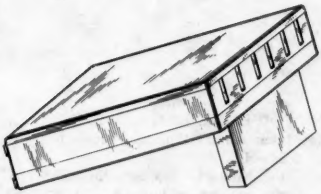
285,036
FLOATABLE TRAY
Jonathan L. Gilchrist, 4987 Campo Rd., and John A. Griffith, 23156 Cass Ave., both of Woodland Hills, Calif. 91364
Filed Jul. 25, 1983, Ser. No. 516,763
Term of patent 14 years
U.S. Cl. D7—37

285,037
CONDIMENT MILL
William E. Bounds, P.O. Box 1547, Torrance, Calif. 90505
Filed Jan. 13, 1984, Ser. No. 570,387
Term of patent 14 years
U.S. Cl. D7—53



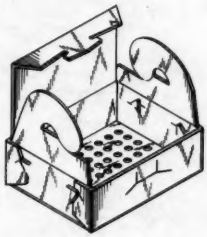
285,038
CUTLERY STORAGE BLOCK
Jerome S. Hahn, 94-26 Poinclara Pl., Fort Lauderdale, Fla. 33324
Filed Mar. 14, 1983, Ser. No. 475,151
Term of patent 14 years
U.S. Cl. D7—74



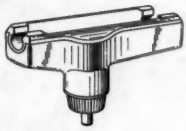


285,039
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Feb. 7, 1983, Ser. No. 464,214
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, MR 181
Term of patent 14 years
U.S. Cl. D7—317

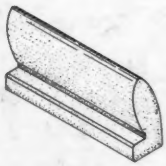
285,040
HANGING STEAMER PACKAGE
Karen Stinson, Mt. Laurel, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Aug. 15, 1983, Ser. No. 523,215
Term of patent 14 years
U.S. Cl. D7—360



285,041
CHUCK KEY
Robert I. Somers, Raleigh, N.C., assignor to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 507,221, Jun. 23, 1983. This application Dec. 16, 1983, Ser. No. 562,070
Term of patent 14 years
U.S. Cl. D8—21



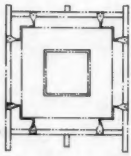
285,042
SHARPENING HONE
Jimmy L. Sparks, 1399 Parkridge, Norco, Calif. 91760
Filed May 20, 1983, Ser. No. 496,609
Term of patent 14 years
U.S. Cl. D8—91



285,043
SELF-CLOSING DOOR HINGE
Kunihiko Takasaki, Chiba, Japan, assignor to Takigen Seizou Co. Ltd., Tokyo, Japan
Filed May 31, 1984, Ser. No. 615,951
Claims priority, application Japan, Jan. 18, 1984, 59-1021
Term of patent 14 years
U.S. Cl. D8—323

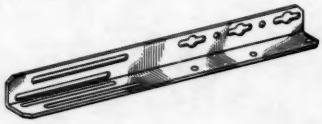
285,044
SLEEVE AND CAP GROMMET SET FOR ELECTRICAL WIRES
Douglas A.J. Mockett, 2634 Via Rivera, Palos Verdes Estates, Calif. 90274
Filed Jan. 6, 1984, Ser. No. 568,787
Term of patent 14 years
U.S. Cl. D8—354

285,045
CHIMNEY BRACE
Nathaniel J. Mahoney, 666 Central St., Franklin, N.H. 03235
Filed Nov. 30, 1983, Ser. No. 556,386
Term of patent 14 years
U.S. Cl. D8—366

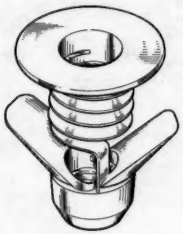


285,046
SPRING FOR FASTENING A RAIL TO A SLEEPER
Reijo Johde, Inhan tehtaat, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
Filed Nov. 28, 1983, Ser. No. 555,370
Claims priority, application Finland, May 30, 1983, 480/83
Term of patent 14 years
U.S. Cl. D8—382

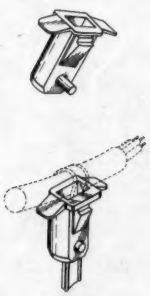
285,047
HEADBOARD BRACKET
Howard Dean; Andre Kocsis, and William H. Yee, all of Downsview, Canada, assignors to Andico Manufacturing Ltd., Downsview, Canada
Filed Aug. 17, 1983, Ser. No. 523,865
Claims priority, application Canada, May 16, 1983, 16-05-83-8
Term of patent 14 years
U.S. Cl. D8—382



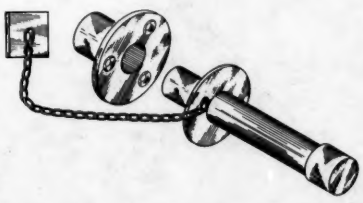
285,048
SCREW ANCHOR
Klaus Beck, Oxelösund, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 23, 1983, Ser. No. 555,112
Claims priority, application Sweden, Jun. 14, 1983, 83-1634
Term of patent 14 years
U.S. Cl. D8—385



285,049
HARNESS CLIP FOR WIRE OR CABLE STRAPPING
Koji Watanabe, Fujisawa, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Nov. 14, 1983, Ser. No. 551,566
Claims priority, application Japan, May 19, 1983, 58-20847
Term of patent 14 years
U.S. Cl. D8—396



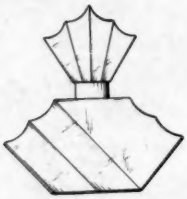
285,050
COMBINED DOOR STOP AND RECEPTACLE UNIT
John W. Looney, 228 Finley Dr., Decatur, Ala. 35601
Filed May 3, 1983, Ser. No. 491,371
Term of patent 14 years
U.S. Cl. D8—402



285,051
DECANTER
Marc Heriard-Dubreuil, Rouillac, France, assignor to A. De Luze & Fils & Cie, Cognac, France
Filed Oct. 25, 1983, Ser. No. 546,485
Claims priority, application United Kingdom, Aug. 10, 1983, 1014552
Term of patent 14 years
U.S. Cl. D9—318

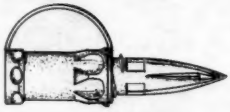
285,052
BOTTLE
Walter G. Bianchi, Via Rossini, 9, I-22055 Merate (Como), Italy, and Hironobu Imai, Via Lanzone, 3, I-20123, Milan, Italy
Filed Mar. 27, 1984, Ser. No. 594,894
Term of patent 14 years
U.S. Cl. D9—371

285,053
PERFUME BOTTLE
Anna Marchetti, Via Salgari, 40, Modena, Italy
Filed Mar. 23, 1984, Ser. No. 593,068
Claims priority, application Italy, Sep. 30, 1983, 29064/83[U]
Term of patent 14 years
U.S. Cl. D9—384



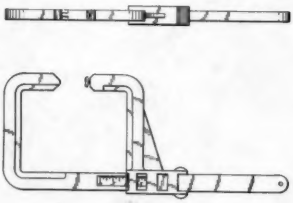
285,054
BOTTLE
Andrew S. Stones, Stones Rd., Ebenezer, N.S.W. 2756, Australia
Filed Sep. 12, 1983, Ser. No. 531,142
Claims priority, application Australia, Mar. 18, 1983, 3269/83
Term of patent 14 years
U.S. Cl. D9—389

285,055
CARTON POURER
Walter Heubel, Raim, Fed. Rep. of Germany, assignor to Cannie Products Limited, Weybridge, England
Filed Jan. 20, 1984, Ser. No. 572,399
Claims priority, application United Kingdom, Jul. 22, 1983, 1014253
Term of patent 14 years
U.S. Cl. D9—434



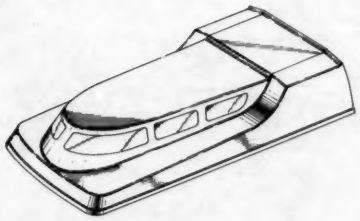
285,056
COMBINED CLOSURE AND OPENER FOR CONTAINER
David O. Allen, Wilmington, Ohio, assignor to Allen Tool Company, Inc., Wilmington, Ohio
Filed Aug. 25, 1983, Ser. No. 526,352
Term of patent 14 years
U.S. Cl. D9—454

285,057
CALIPER
James R. LaBelle, Ferndale, Mich., assignor to LaBelle Enterprises, Ferndale, Mich.
Filed Aug. 15, 1983, Ser. No. 523,347
Term of patent 14 years
U.S. Cl. D10—73

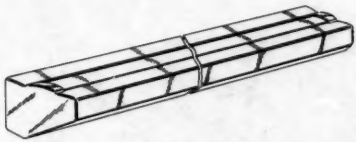


285,058
FOUR WHEELED MOTORCYCLE
Kazuyuki Takagaki, Kosai, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan
Filed Apr. 20, 1984, Ser. No. 602,456
Claims priority, application Japan, Mar. 9, 1984, 59-9389
Term of patent 14 years
U.S. Cl. D12—107

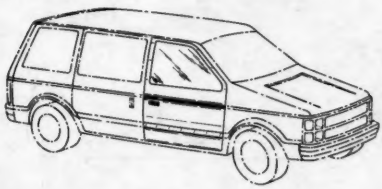
285,059
SPORT TOP FOR A VAN CONVERSION
Richard A. Nardi, Elkhart, Ind., assignor to Hoosier FRP, Inc., Elkhart, Ind.
Filed Aug. 1, 1983, Ser. No. 518,835
Term of patent 14 years
U.S. Cl. D12—156



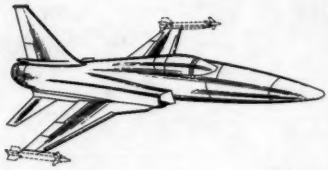
285,060
RUB RAIL FOR AN AUTOMOBILE
Claus Luthe, Munich, and Boyke Boyer, Seefeld, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 8, 1983, Ser. No. 483,387
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1982, MR 13163
Term of patent 14 years
U.S. Cl. D12—190



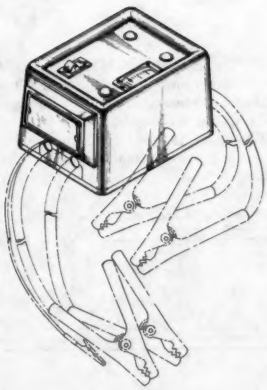
285,061
AUTOMOBILE DOOR PANEL EXTERIOR SURFACE
William A. Dayton, Northville; John E. Crain, Birmingham, and Robert N. Hubbach, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 562,809, Dec. 19, 1983. This application Aug. 27, 1984, Ser. No. 644,605
Term of patent 14 years
U.S. Cl. D12—196



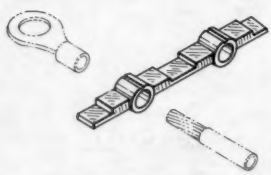
285,062
AIRCRAFT
Robert R. Sandusky, Jr., Los Alamitos; Victor C. Brock, Whittier, and Lionel O. Gay, Glendale, all of Calif., assignor to Northrop Corporation, Hawthorne, Calif.
Continuation of Ser. No. 186,675, Sep. 12, 1980, abandoned. This application Aug. 8, 1983, Ser. No. 521,222
Term of patent 14 years
U.S. Cl. D12—342



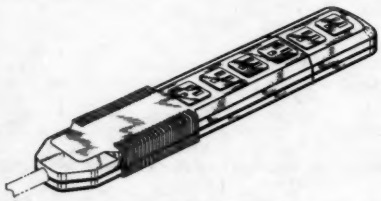
285,063
COMBINED JUMPER CABLE CONTROL BOX AND LAMP
Bobby L. Bates, San Dimas, Calif., assignor to Bates - Johnson & Co., Inc., San Dimas, Calif.
Filed Jan. 19, 1984, Ser. No. 571,837
Term of patent 14 years
U.S. Cl. D13—5



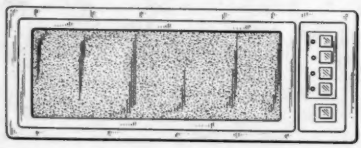
285,064
INTEGRALLY FORMED INSULATOR ASSEMBLY
Keiji Sonoda, Hirakata, Japan, assignor to Nichifu Terminal Industries Co., Ltd., Osaka, Japan
Filed Oct. 25, 1983, Ser. No. 545,324
Term of patent 14 years
U.S. Cl. D13—17



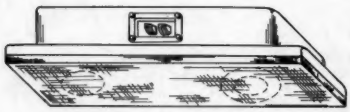
285,065
MULTIPLE OUTLET STRIP
Bert Bobrovniczky, Don Mills, Canada, assignor to Noma Inc., Scarborough, Canada
Filed Feb. 21, 1984, Ser. No. 581,875
Term of patent 14 years
U.S. Cl. D13—30



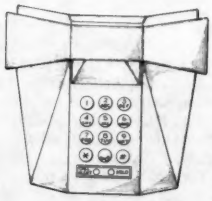
285,066
FACE PLATE FOR LIGHTING CONTROL
Zalman A. Liss, Allentown; Joel S. Spira, Coopersburg, and David G. Luchaco, Macungie, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.
Filed Aug. 19, 1983, Ser. No. 524,546
Term of patent 14 years
U.S. Cl. D13—35

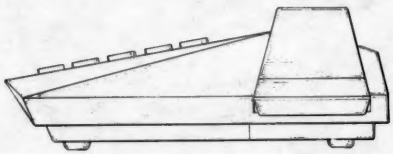


285,067
LOUDSPEAKER
Pascal Delbuck, 31220 La Baya Dr. #10, Westlake Village, Calif. 91362
Filed Jul. 18, 1983, Ser. No. 514,926
Term of patent 14 years
U.S. Cl. D14—30



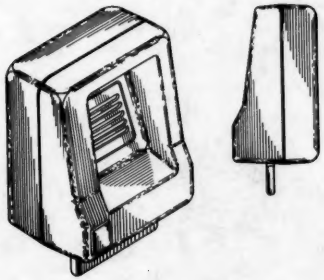
285,068
TELEPHONE
Erik Haugaard, Pasadena, Calif., assignor to TeleQuest, Inc., Burbank, Calif.
Filed Aug. 20, 1984, Ser. No. 642,161
Term of patent 14 years
U.S. Cl. D14—53



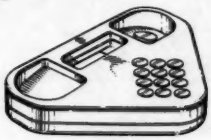


285,069
TELEPHONE UNIT
Masakazu Tsukamoto, and Satoru Tsukiyama, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1983, Ser. No. 539,756
Claims priority, application Japan, Apr. 6, 1983, 58-14460
Term of patent 14 years
U.S. Cl. D14—53

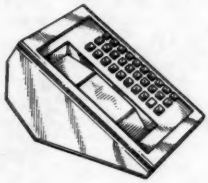
285,070
HANDSET TELEPHONE RECEPTACLE OR SIMILAR ARTICLE
Thomas G. Beaumont, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 10, 1984, Ser. No. 598,759
Term of patent 14 years
U.S. Cl. D14—61



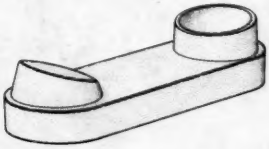
285,071
TELEPHONE SET BASE
Floyd J. Pushelberg, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 23, 1984, Ser. No. 582,957
Term of patent 14 years
U.S. Cl. D14—62



285,072
TELEPHONE DIALING BASE
Bryan B. Hill, Mississauga; Charles E. Hill, and Antonius A. Vander Park, both of Port Credit, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jan. 9, 1984, Ser. No. 569,343
Term of patent 14 years
U.S. Cl. D14—62



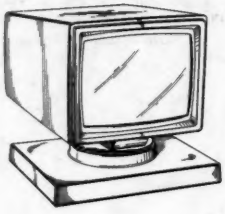
285,073
TELEPHONE HANDSET
David C. Danielson, New Canaan, Conn.; Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 9, 1984, Ser. No. 598,388
Term of patent 14 years
U.S. Cl. D14—63



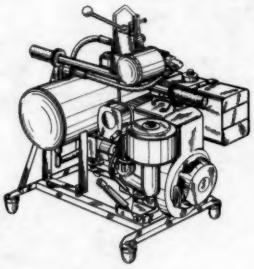
285,074
SATELLITE DISH ANTENNA OUTER RIM
John R. Winegard, Evergreen, and Keith B. Cowan, Arvada, both of Colo., assignors to Winegard Company, Iowa
Filed Dec. 29, 1983, Ser. No. 566,816
Term of patent 14 years
U.S. Cl. D14—90

285,075
MAGNETIC DISK STORAGE SYSTEM
Dwaine S. Katai, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.
Filed Aug. 2, 1983, Ser. No. 519,695
Term of patent 14 years
U.S. Cl. D14—102

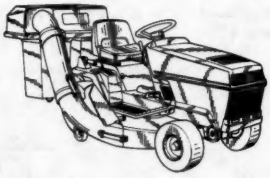
285,076
VIDEO DISPLAY TERMINAL HOUSING
William J. Proetta, Elburn, Ill.; Gordon E. Sylvester, Jamaica, N.Y., and Alvin R. Tilley, Redbank, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 5, 1984, Ser. No. 596,926
Term of patent 14 years
U.S. Cl. D14—113

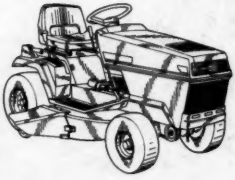


285,077
HYDRAULIC POWER GENERATOR UNIT
Albert L. Moody, Mableton, Ga., assignor to F. C. Brown Rentals, Inc., Atlanta, Ga.
Filed Apr. 25, 1984, Ser. No. 603,826
Term of patent 14 years
U.S. Cl. D15—1

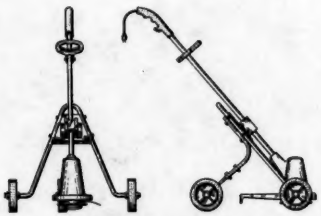


285,078
LAWN TRACTOR
Sadao Mizushima, Tokyo, and Toshihiko Shibuya, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 15, 1984, Ser. No. 640,836
Claims priority, application Japan, Feb. 17, 1984, 59-5791
Term of patent 14 years
U.S. Cl. D15—15

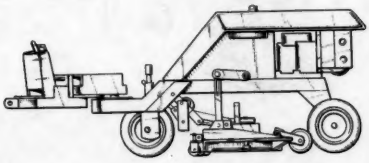


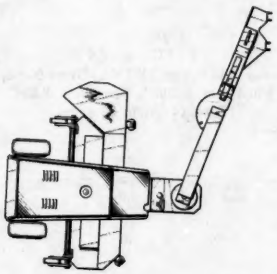


285,079
COMBINED GRASS TRIMMER AND WHEELED FRAME
Edward A. Huthmacher, 2807 Country Club Blvd., Sugar Land, Tex. 77478
Filed Sep. 10, 1984, Ser. No. 649,063
Term of patent 14 years
U.S. Cl. D15—16

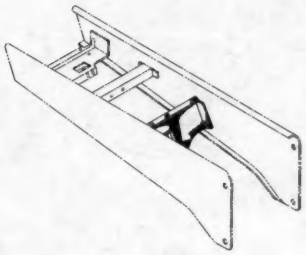


285,080
TRAILING LAWN MOWER
Edward Klein, Wilmette, Ill., assignor to Ingersoll Equipment Co., Inc., Winnecone, Wis.
Filed Oct. 29, 1984, Ser. No. 665,849
Term of patent 14 years
U.S. Cl. D15—27

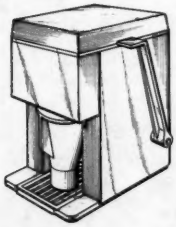




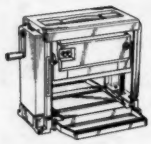
285,081
PLANTER ROW CENTER SUPPORT
Mark W. Wood, Moline, Ill., assignor to Deere & Company, Moline, Ill.
Filed May 8, 1985, Ser. No. 731,803
Term of patent 14 years
U.S. Cl. D15—33



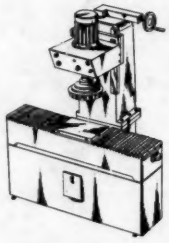
285,082
HOUSING FOR FROZEN DESSERT MIXER AND DISPENSER
Charles E. Verkler, Peoria, Ill., assignor to International Food Equipment Inc., Peoria, Ill.
Filed Jul. 25, 1983, Ser. No. 516,818
Term of patent 14 years
U.S. Cl. D15—82



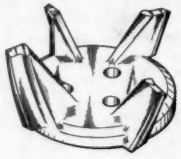
285,083
ELECTRIC PLANER
Kouichi Miyamoto, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Filed Jul. 9, 1984, Ser. No. 629,021
Claims priority, application Japan, Feb. 8, 1984, 59-4383
Term of patent 14 years
U.S. Cl. D15—127



285,084
MILLING MACHINE
Rufus W. Aldridge, Jr., Huntsville, Ala., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.
Filed Jul. 23, 1984, Ser. No. 633,693
Term of patent 14 years
U.S. Cl. D15—131

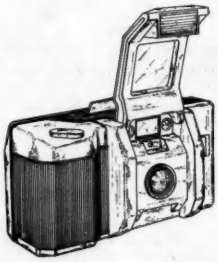


285,085
IMPELLER FOR COMMINUTING EQUIPMENT
Robert R. Fischer, Michigan City, and Joe R. Urschel, Valparaiso, both of Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.
Filed Oct. 27, 1983, Ser. No. 546,197
Term of patent 14 years
U.S. Cl. D15—139



285,086
PHOTOGRAPHIC CAMERA
Toshio Kotake, Kyoto, Japan, assignor to Kyocera Corporation, Kyoto, Japan
Filed Apr. 11, 1984, Ser. No. 599,025
Claims priority, application Japan, Oct. 11, 1983, 58-44110
Term of patent 14 years
U.S. Cl. D16—5

285,087
CAMERA WITH INTEGRAL FLASH UNIT
David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 10, 1984, Ser. No. 649,103
Term of patent 14 years
U.S. Cl. D16—6



285,088
EYEGLASSES
Barton M. Levoy, 130 Cutter Mill Rd., Great Neck, N.Y. 11022
Filed Aug. 6, 1984, Ser. No. 638,035
Term of patent 14 years
U.S. Cl. D16—102

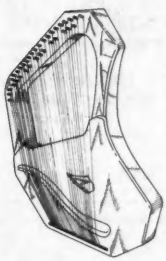
285,089
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Aug. 23, 1984, Ser. No. 643,816
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 13 776
Term of patent 14 years
U.S. Cl. D16—102

285,090
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Dec. 10, 1984, Ser. No. 679,990
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1984, 14010
Term of patent 14 years
U.S. Cl. D16—102

285,091
EYEGLASSES
Barton M. Levoy, 130 Cutter Mill Rd., Great Neck, N.Y. 11022
Filed Dec. 31, 1984, Ser. No. 687,749
Term of patent 14 years
U.S. Cl. D16—102

285,092
EYEGLASS TEMPLE
Barry L. Baum, 53 The Serpentine, Roslyn Estates, N.Y. 11576, assignor to Barry Lee Baum, Roslyn Estates, N.Y.
Filed Jul. 31, 1984, Ser. No. 636,405
Term of patent 14 years
U.S. Cl. D16—127

285,093
LYRE
Norbert Visser, Noordlaan 26, 1861 GN Bergen NH, Netherlands
Filed Aug. 10, 1983, Ser. No. 521,916
Claims priority, application Switzerland, Feb. 18, 1983, DM/002255
Term of patent 14 years
U.S. Cl. D17—14



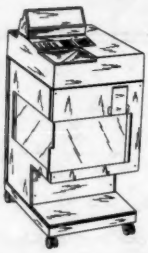
285,094
COMBINED CALCULATOR RULER, AND DESK TRAY
Robert S. K. Li, Central, Hong Kong, assignor to RJP Electronics Limited, Central, Hong Kong
Filed Mar. 16, 1984, Ser. No. 590,886
Claims priority, application United Kingdom, Jan. 26, 1984, 1017536
Term of patent 14 years
U.S. Cl. D18—2

285,095

COIN PACKAGING MACHINE

Alvar I. Lundgren, and Anders B. A. Lundgren, both of Gothenburg, Sweden, assignors to Scan Coin AB, Malmo, Sweden

Filed Oct. 2, 1984, Ser. No. 657,072
Claims priority, application Sweden, Apr. 4, 1984, 841099
Term of patent 14 years
U.S. Cl. D18—3



285,096

WRITING INSTRUMENT

Franco Verona, Turin, Italy, assignor to Aurora S.p.A., Turin, Italy

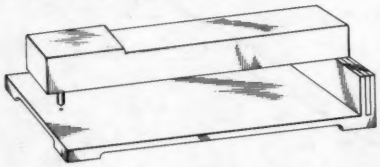
Filed Nov. 10, 1982, Ser. No. 440,531
Claims priority, application Italy, May 21, 1982, 53317/82[U]
Term of patent 14 years
U.S. Cl. D19—48

285,097

DIMPLE PUNCH FOR FORMING RISERS ON DRAFTSMEN'S TEMPLATE

C. Dennis Lord, Dallas, Tex., assignor to Rotex Company, Dallas, Tex.

Filed Jan. 5, 1984, Ser. No. 568,396
Term of patent 14 years
U.S. Cl. D19—72

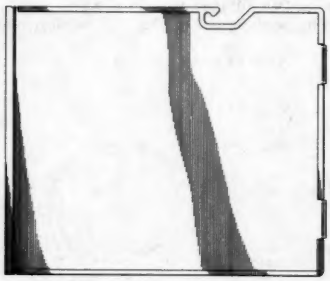


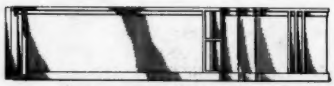
285,098

FILING CONTAINER

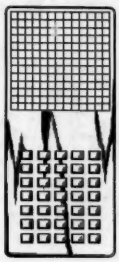
Albert G. Ermanski, Auburn; Bernard T. Cournoyer, Holden, and David M. Wright, Shrewsbury, all of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Jun. 20, 1983, Ser. No. 505,573
Term of patent 14 years
U.S. Cl. D19—90

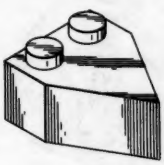




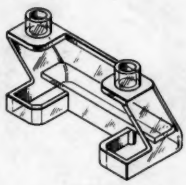
285,099
HOUSING FOR AN ELECTRONIC GAME
Boyd W. Fellows, 534 Monaco, St. Louis, Mo. 63122
Filed Aug. 11, 1983, Ser. No. 522,209
The portion of the term of this patent subsequent to Jun. 14, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—13



285,100
TOY BUILDING BLOCK
Leo S. Volpe, Collingswood, N.J., assignor to Tyco Industries, Inc., Moorestown, N.J.
Filed Feb. 29, 1984, Ser. No. 584,588
Term of patent 14 years
U.S. Cl. D21—108



285,101
TOY INTERCONNECTING ANGLE BLOCK OR THE LIKE
Kiyohide Nakata, Tama, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 10, 1984, Ser. No. 648,529
Claims priority, application Japan, May 30, 1984, 59-21776
Term of patent 14 years
U.S. Cl. D21—108

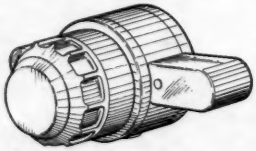


285,102
NOVELTY FIGURE
Freddy T. Lee, 467 SE. Whitmore Dr., Port St. Lucie, Fla. 33452
Filed May 4, 1984, Ser. No. 607,316
Term of patent 14 years
U.S. Cl. D21—149

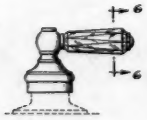
285,103
GOLF TEE RESEMBLING CIGARETTE
Richard E. Kurtz, 380 Keller Rd., Berwyn, Pa. 19312
Filed Aug. 12, 1983, Ser. No. 522,655
Term of patent 14 years
U.S. Cl. D21—208

285,104
CUT-AWAY HOLSTER
G. William Davis, c/o Davis Leather Co., 118 A La Porte St., Arcadia, Calif. 91006
Filed Jan. 3, 1984, Ser. No. 567,747
Term of patent 14 years
U.S. Cl. D3—101

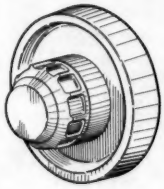
285,105
MIXING VALVE FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, United Kingdom, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,925
Claims priority, application United Kingdom, Dec. 4, 1984, 1023712
Term of patent 14 years
U.S. Cl. D23—19



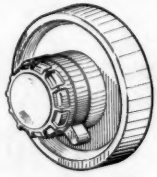
285,106
LEVER HANDLE FOR PLUMBING FIXTURE
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.
Filed Mar. 8, 1984, Ser. No. 587,620
Term of patent 14 years
U.S. Cl. D23—28



285,107
COMBINED CONTROL HANDLE AND ESCUTCHEON FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, United Kingdom, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,924
Claims priority, application United Kingdom, Dec. 4, 1986, 1023713
Term of patent 14 years
U.S. Cl. D23—31

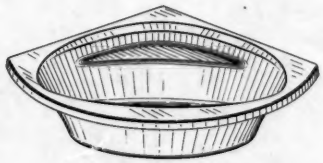


285,108
COMBINED CONTROL HANDLE AND ESCUTCHEON FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, United Kingdom, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,926
Claims priority, application United Kingdom, Dec. 4, 1984, 1023715
Term of patent 14 years
U.S. Cl. D23—31

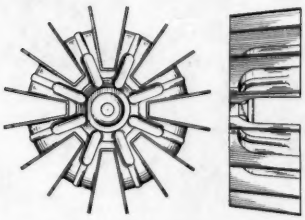


285,109
SEALING RING
Lennart Jörnhagen, Värnamo, Sweden, assignor to Forsheda AB, Forsheda, Sweden
Filed Oct. 16, 1984, Ser. No. 661,490
Term of patent 14 years
U.S. Cl. D23—47

285,110
CORNER BATH TUB
John D. Burgess, Loretto, and Thomas E. Taylor, Rexdale, both of Canada, assignors to Acriform Engineering, Inc., Newmarket, Canada
Filed Nov. 28, 1984, Ser. No. 675,917
Claims priority, application Canada, Jun. 22, 1984, 2206842
Term of patent 14 years
U.S. Cl. D23—55

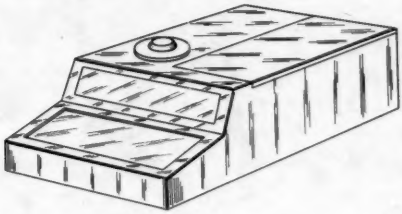


285,111
IMPELLER
David J. Hanson, Newcastle, Me., assignor to Hanson Energy Products, Newcastle, Me.
Filed Sep. 8, 1983, Ser. No. 530,381
Term of patent 14 years
U.S. Cl. D23—165

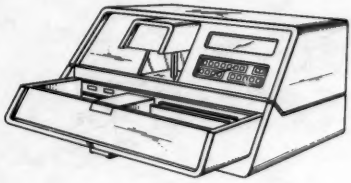


285,112
PHYSIOLOGICAL PRESSURE MONITORING INSTRUMENT
Stephens N. Sato, and Joseph J. Manno, both of San Diego, Calif., assignors to Camino Laboratories, San Diego, Calif.
Filed Jun. 1, 1983, Ser. No. 500,033
Term of patent 14 years
U.S. Cl. D24—17

285,113
URINOMETER
Kevin Williams, Buffalo, N.Y., assignor to Warner-Lambert Technologies, Inc., Southbridge, Mass.
Filed Nov. 25, 1983, Ser. No. 555,223
Term of patent 14 years
U.S. Cl. D24—17



285,114
AUTOMATED URINALYSIS INSTRUMENT
Kenneth D. Collister, and Steven C. Johnson, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed May 26, 1983, Ser. No. 498,299
Term of patent 14 years
U.S. Cl. D24—17

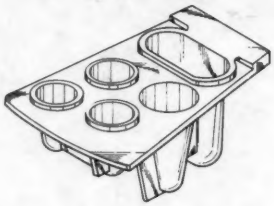


285,115
COLLECTOR FOR CAPILLARY BLOOD
Todd A. Proud, Claymont; Tom F. Lin, Bear, both of Del.; Wayne J. Mitchell, Elkton, Md., and James D. Kasper, Montpelier, Ohio, assignors to Terumo Medical Corporation, Elkton, Md.
Filed Dec. 5, 1983, Ser. No. 558,027
Term of patent 14 years
U.S. Cl. D24—29

285,116
EXTERNAL BODY MASSAGE DEVICE
Richard Hoff, 1187 Delaware St., Berkeley, Calif. 94702
Continuation-in-part of Ser. No. 124,315, Feb. 25, 1980. This application Dec. 20, 1982, Ser. No. 451,251
Term of patent 14 years
U.S. Cl. D24—36

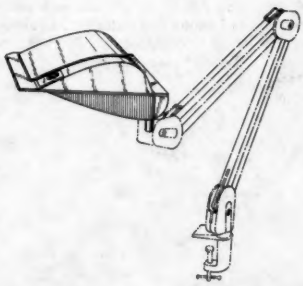
285,117
COMBINED BODY AND FOOT MASSAGER
Benjamin L. Snyder, 7216 Plaza De La Costa, Rancho La Costa, Carlsbad, Calif. 92008
Filed Apr. 23, 1985, Ser. No. 726,032
Term of patent 14 years
U.S. Cl. D24—36

285,118
SAMPLE CUP
Tung-Ming Huang, Elk Grove Village, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jan. 19, 1983, Ser. No. 459,158
Term of patent 14 years
U.S. Cl. D24—56

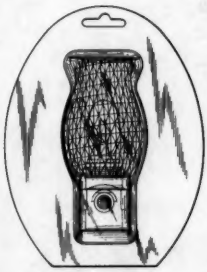


285,119
SMOKESTACK
Alfons O. Krautz, 10 Old Field-Woods Rd., Old Field, N.Y. 11733
Filed Apr. 21, 1983, Ser. No. 487,443
Term of patent 14 years
U.S. Cl. D25—35

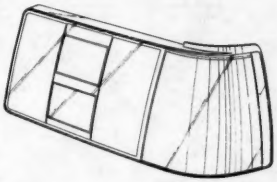
285,120
LAMP
Jessen C. Krogsrud, Oslo, Norway, assignor to Jac Jacobsen A/S, Oslo, Norway
Filed Jan. 26, 1984, Ser. No. 574,290
Term of patent 14 years
U.S. Cl. D26—65



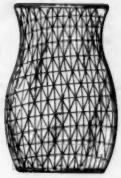
285,121
COMBINED NIGHTLIGHT AND PACKAGE THEREFOR
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Jan. 6, 1984, Ser. No. 568,982
Term of patent 14 years
U.S. Cl. D26—26



285,122
REAR COMBINATION LAMP FOR AN AUTOMOBILE
Tsutomu Fujita, Yokosuka, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 4, 1984, Ser. No. 606,945
Claims priority, application Japan, May 11, 1983, 57-25038
Term of patent 14 years
U.S. Cl. D26—35

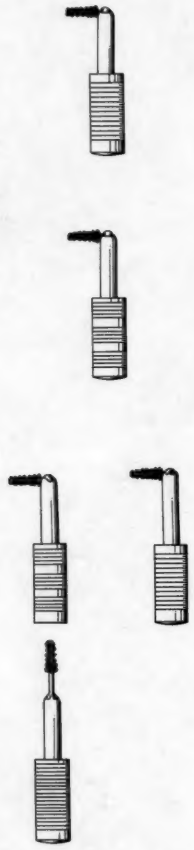


285,123
DIFFUSER FOR A NIGHT LIGHT OR SIMILAR ARTICLE
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Jan. 9, 1984, Ser. No. 569,098
Term of patent 14 years
U.S. Cl. D26—118



285,124
LANTERN HOLDER
Robert J. Hoover, Rte. 7, Box 352A, Spartanburg, S.C. 29303
Filed Aug. 15, 1983, Ser. No. 523,457
Term of patent 14 years
U.S. Cl. D26—138

285,125
ADJUSTABLE COSMETIC APPLICATOR
Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236, and Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414
Filed Oct. 31, 1983, Ser. No. 547,004
Term of patent 14 years
U.S. Cl. D28—7

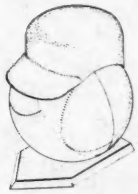


285,126
SHAVER
Kwok-Hung Liu, Kowloon, Hong Kong, assignor to Transistolite Manufacturing Ltd., Kowloon, Hong Kong
Filed Jan. 31, 1984, Ser. No. 575,450
Claims priority, application United Kingdom, Aug. 2, 1983, 1,014,434
Term of patent 14 years
U.S. Cl. D28—49

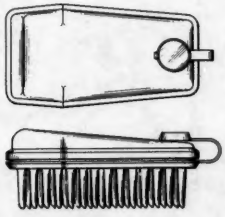
285,127
DENTAL FLOSS HOLDER
Helen Kesler, 27117 Hass, Dearborn Heights, Mich. 48127
Filed Nov. 14, 1983, Ser. No. 550,957
Term of patent 14 years
U.S. Cl. D28—64

285,128
ILLUMINATED LIPSTICK CASE
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 4, 1984, Ser. No. 596,803
Claims priority, application United Kingdom, Oct. 5, 1983, 1 015 516
Term of patent 14 years
U.S. Cl. D28—85

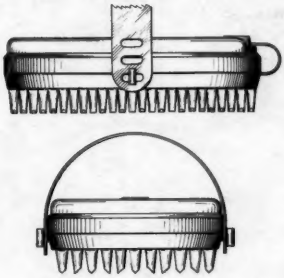
285,129
AQUARIUM
Douglas C. Phillips, and David P. Huber, both of 19230 Wyandotte St., Reseda, Calif. 91335
Filed Aug. 17, 1984, Ser. No. 641,595
Term of patent 14 years
U.S. Cl. D30—9



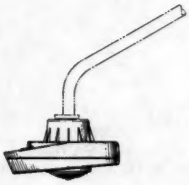
285,130
COMBINED APPLICATOR AND GROOMING BRUSH FOR ANIMALS
Charles N. Wilkeson, 114 Colina Pl., Ormond Beach, Fla. 32074
Filed Jan. 30, 1984, Ser. No. 575,054
Term of patent 14 years
U.S. Cl. D30—40



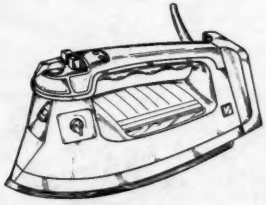
285,131
COMBINED APPLICATOR AND GROOMING BRUSH FOR ANIMALS
Charles N. Wilkeson, 114 Colina Pl., Ormond Beach, Fla. 32074
Filed Jun. 17, 1985, Ser. No. 745,495
Term of patent 14 years
U.S. Cl. D30—40



285,132
HEAD FOR A PORTABLE AIR BLOWER FOR YARD AND LAWN CARE
Raymond G. Smith, and Raymond M. Carter, both of Los Angeles, Calif., assignors to Hawaiian Motor Company, Long Beach, Calif.
Filed Nov. 7, 1983, Ser. No. 549,043
Term of patent 14 years
U.S. Cl. D32—18



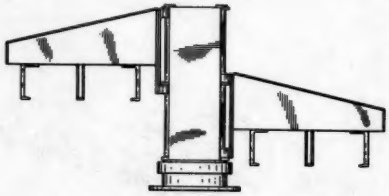
285,133
PRESSING IRON
Bernard B. Bluestein, Des Plaines, Ill., assignor to John Zink Company, Tulsa, Okla.
Filed Apr. 27, 1984, Ser. No. 605,443
Term of patent 14 years
U.S. Cl. D32—70



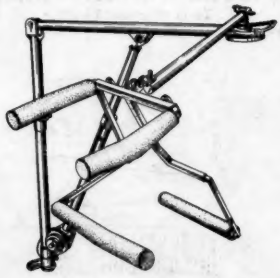
285,134
CART
Roland Schunter, Lorch-Waldhausen, Fed. Rep. of Germany, assignor to Floordress Reinigungsgeraete GmbH, Lorch-Waldhausen, Fed. Rep. of Germany
Filed Nov. 9, 1984, Ser. No. 670,141
Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3042
Term of patent 14 years
U.S. Cl. D34—21

285,135
LUGGAGE CARRIER
Michael Gordon, New York, N.Y., assignor to Koret Inc., New York, N.Y.
Filed Dec. 5, 1983, Ser. No. 558,013
Term of patent 14 years
U.S. Cl. D34—26

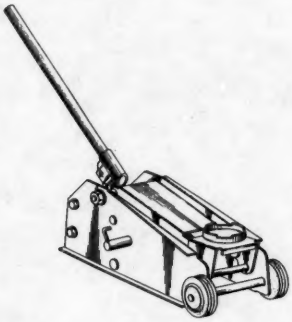
285,136
TURRET STACKER
Lawrence J. Richards, Elk Grove Village, Ill., assignor to Braner Enterprises Inc., Schiller Park, Ill.
Filed May 23, 1983, Ser. No. 497,031
Term of patent 14 years
U.S. Cl. D34—28



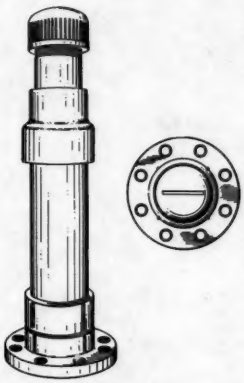
285,137
COMBINED LIFTING TOOL AND MOUNTED YOKE FOR HANDICAPPED PERSON
Ingemar D. A. Svensson, Långavallsgatan 13, 424 57 Angered, Sweden
Filed Jun. 1, 1983, Ser. No. 500,145
Claims priority, application Sweden, Dec. 2, 1982, 82-2882
Term of patent 14 years
U.S. Cl. D34—28



285,138
JACK
Takeshi Yamagishi, Shizuoka, Japan, assignor to Yasui Sangyo Co. Ltd., Fujinomiya, Japan
Filed Jan. 24, 1983, Ser. No. 460,470
Claims priority, application Japan, Aug. 20, 1982, 57-37739
Term of patent 14 years
U.S. Cl. D34—31



285,139
COIN BANK
Walter Miles, 279 S. Ellyn Ave., Glen Ellyn, Ill. 60137
Filed Feb. 16, 1984, Ser. No. 580,842
Term of patent 14 years
U.S. Cl. D99—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF AUGUST, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Trill, Anthony J., 4,605,550, Cl. 424-22.000.
Welstead, William J., Jr., 4,605,652, Cl. 514-214.000.

Abbott Laboratories: *See*—
Summers, James B., Jr., 4,605,669, Cl. 514-575.000.

Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., to Du Pont de Nemours, E. I., and Company. Electrochemical determination of hematocrit. 4,605,628, Cl. 436-70.000.

Abe, Hiroki: *See*—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, to PCUK Products Chimiques Ugine Kuhlmann. Continuous process for the gaseous-phase preparation of trichlorotrifluoroethane, dichlorotetrafluoroethane and monochloropentafluoroethane in controlled proportions. 4,605,798, Cl. 570-164.000.

Abell, Steven; and Peltier, Thomas L., to Monsanto Company. Unfortified liquid paper sizing composition and method of preparation. 4,605,445, Cl. 106-236.000.

Abercrombie, Bolling A., to Hughes Tool Company. Method and apparatus for monitoring well tubing fluid. 4,605,065, Cl. 166-250.000.

Accuswing, Incorporated: *See*—
Hurd, Bruce; and Oda, Robert, 4,605,227, Cl. 273-54.00B.

Acharya, Kishore C.: *See*—
Crawford, Carl R.; and Acharya, Kishore C., 4,606,004, Cl. 364-414.000.

Achelpohl, Fritz; Mundus, Friedhelm; and Ebmeyer, Wilfried, to Windmoller & Holscher. Apparatus for making plastic carrier bags. 4,605,392, Cl. 493-196.000.

Adams, J. Robert, Jr.; Mitrano, James R.; and Juneau, Matthew K., to Ethyl Corporation. Phosphonitrilic chloride trimer purification. 4,605,539, Cl. 423-300.000.

Adams, John B., Jr., to Du Pont de Nemours, E. I., and Company. Pyridyl sulfone herbicides. 4,605,432, Cl. 71-92.000.

Adell, Robert, to U.S. Product Development Company. Edge guard. 4,604,832, Cl. 49-462.000.

ADIR, S.A.R.L.: *See*—
Lavielle, Gilbert; and Cudennec, Claude, 4,605,647, Cl. 514-85.000.

Adolph Coors Company: *See*—
Rasmussen, David E.; and Moen, Bruce A., 4,605,839, Cl. 219-349.000.

Advanced Energy Concepts '81 Ltd.: *See*—
Distin, Robert G., Jr., 4,604,916, Cl. 74-805.000.

Advanced Micro Devices, Inc.: *See*—
Bonn, Matthew A., 4,604,790, Cl. 29-576.00B.
Gwozdz, Peter S.; and Bath, Hubert M., 4,605,470, Cl. 156-643.000.
Hirzel, Frederic J.; and Levy, Roy J., 4,606,052, Cl. 375-87.000.
Varadarajan, Hemmige D.; and Vasseghi, Nader, 4,605,864, Cl. 307-270.000.

AE Development Corporation: *See*—
Prussin, Samuel B.; Levine, Ralph; and Hintz, Warren J., 4,605,554, Cl. 424-66.000.

AECI Limited: *See*—
Baker, Rodney C.; and van Rensburg, Philippus J., 4,604,971, Cl. 119-86.000.

Affarsverket FFV: *See*—
Nyzell, Jan-Erik, 4,605,372, Cl. 434-16.000.

Agency of Industrial Science and Technology: *See*—
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,605,796, Cl. 568-902.000.
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.
Terashima, Kazutaka; and Fukuda, Tsuguo, 4,606,037, Cl. 373-6.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, 4,605,954, Cl. 358-27.000.
Klotzer, Sieghart, 4,605,610, Cl. 430-376.000.

Agfa-Gevaert, N.V.: *See*—
Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, 4,605,613, Cl. 430-562.000.

Ahler, Wilhelm: *See*—
Krone, Bernard; and Ahler, Wilhelm, 4,604,855, Cl. 53-64.000.

Ahlert, Dieter, to Dierks & Sohne GmbH & Co. KG. Sensory apparatus. 4,605,172, Cl. 241-33.000.

Aimoto, Kenji: *See*—
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

Air Products and Chemicals, Inc.: *See*—
Dyer, Paul N.; and Pierantozzi, Ronald, 4,605,639, Cl. 502-331.000.
Ford, Michael E.; and Johnson, Thomas A., 4,605,770, Cl. 564-479.000.
Orphanides, Gus G., 4,605,589, Cl. 428-290.000.

Air Sensor Inc.: *See*—
Watkins, Dennis W., 4,604,895, Cl. 73-204.000.

Aires, Ramon H.: *See*—
Ogle, Dennis F.; Clark, Charles A., Jr.; and Aires, Ramon H., 4,605,890, Cl. 323-209.000.

Airmatic-Allied, Inc.: *See*—
Moffat, Allen J.; and Ours, Tom, 4,605,196, Cl. 251-84.000.

Aisin Seiki Co., Ltd.: *See*—
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,604,829, Cl. 49-352.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ando, Masamoto; Takeuchi, Hiroaki; Yamada, Toyohisa; and Yamanaka, Toshihiko, 4,605,263, Cl. 303-116.000.
Tsubouchi, Kaoru, 4,604,944, Cl. 92-98.00D.

Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, to Outokumpu Oy. Pulse field metal detector with spaced, dual coil transmitter and receiver systems. 4,605,898, Cl. 324-232.000.

Aizawa, Osamu: *See*—
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Akebono Brake Industry Co., Ltd.: *See*—
Ogiwara, Osao, 4,605,105, Cl. 188-251.00M.

Akkerman, Neil H., to AVA International Corp. Well apparatus. 4,605,064, Cl. 166-237.000.

Aksay, Ilhan A.: *See*—
Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., 4,605,440, Cl. 75-238.000.

Akutagawa, Susumu: *See*—
Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,605,750, Cl. 556-7.000.

Akzo NV: *See*—
Peelen, Frank C., 4,605,719, Cl. 526-282.000.

Albers, August, to Hermann Berstorff Maschinenbau GmbH. Mixing and shearing roller-mill. 4,605,309, Cl. 366-76.000.

Alberto-Culver Company: *See*—
Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., 4,605,021, Cl. 132-33.00R.

Albrecht, Ernst: *See*—
Busch, Edgar; and Albrecht, Ernst, 4,604,958, Cl. 112-443.000.

Albrecht, Leman P.; and Ellis, Darwin L., to Aluminum Company of America. Method and apparatus for sealing a container with a tamper-evident closure. 4,604,853, Cl. 53-487.000.

Aldegheri, Roberto: *See*—
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.

Aldred, Derek L., to Haskel, Inc. Apparatus for applying tension to studs. 4,604,918, Cl. 81-57.380.

Alexander, James L., to McCoy-Ellison, Inc. Strand tension controlling apparatus. 4,605,181, Cl. 242-149.000.

Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., to Spetsialnoe Konstruktorskoe Bjuro "Transprogress" . Device for sealing the detachable joints of tubing elements in pneumatic transport facilities. 4,605,247, Cl. 285-9.200.

Alfa-Laval AB: *See*—
Andersson, Jarl A.; and Hallgren, Leif, 4,605,060, Cl. 165-166.000.

Alfenaar, Marinus, to Electrochemische Energieconversie N.V. Method of operation of a fuel cell. 4,605,601, Cl. 429-13.000.

Aline Loitz-Triebold: *See*—
Loitz, Jurgen, 4,605,311, Cl. 368-77.000.

Allen, Archelaius D., to Dobson Park Industries Plc. Mine roof support and attachment means therefor. 4,605,341, Cl. 405-297.000.

Allen, Thomas R., Jr., to Economy Industrial Corporation. Method and apparatus for casting ferroalloys and slags in moulds having a large ratio of mould mass to cavity size. 4,605,055, Cl. 164-479.000.

Allensworth, Dana R., to Motorola, Inc. Method of controlling printed circuit board solder fillets and printed circuit boards including solder fillet control patterns. 4,605,987, Cl. 361-403.000.

Allied Corporation: *See*—
Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., 4,604,870, Cl. 60-551.000.

Bartholomew, Roy E., 4,605,262, Cl. 303-84.00A.
Gaiser, Robert F., 4,604,866, Cl. 60-535.000.
Reimschuessel, Herbert K.; and Ulmer, Harry E., 4,605,707, Cl. 525-410.000.
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,605,595, Cl. 428-413.000.

Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., to Torrington Company, The. Double row roller bearing retainer. 4,605,322, Cl. 384-575.000.

Alpia S.A.: *See*—
Bruneau, Alain, 4,605,189, Cl. 248-162.100.

Altherr, Russell G., to Amsted Industries Incorporated. Coupler knuckle. 4,605,133, Cl. 213-155.000.

Aluminium Pechiney: *See*—
Langon, Bernard, 4,605,481, Cl. 204-243.00M.

Aluminum Company of America: *See*—
Albrecht, Leman P.; and Ellis, Darwin L., 4,604,853, Cl. 53-487.000.
Hovland, Lyle W.; and Klingensmith, James D., 4,605,333, Cl. 403-27.000.

Amax Inc.: *See*—
Duyvesteyn, Willem P. C., 4,605,435, Cl. 75-0.50R.

Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., to PPG Industries, Inc. High solids lactone-polyester polyols and coating compositions thereof. 4,605,724, Cl. 528-73.000.

Amdahl Corporation: *See*—
Price, John E.; and De Clue, Larry W., 4,605,871, Cl. 307-455.000.

American Cyanamid Company: *See*—
Guerro, Gerald J.; Proverb, Robert J.; and Tarvin, Robert F., 4,605,702, Cl. 525-154.000.
Witheford, John M.; Pellon, Joseph J.; and Colman, William P., 4,605,689, Cl. 523-313.000.

American Home Products Corporation: *See*—
DeYoung, Joyce L., 4,605,671, Cl. 514-647.000.

American Hospital Supply Corporation: *See*—
Sias, Ralph M.; Hurley, Nancy J.; and Dalebout, Melvin W., 4,605,582, Cl. 428-120.000.

American Standard Inc.: *See*—
Morano, Robert E.; Vogel, Victor J.; and Pawchak, Peter, 4,605,102, Cl. 186-37.000.

Amerigo Technology Limited: *See*—
Young, Peter J.; and Romocki, Julian M. E., 4,605,068, Cl. 166-307.000.

Amitay, Noach; and Greenstein, Lawrence J., to AT&T Bell Laboratories. Cross-polarization interference cancellation. 4,606,054, Cl. 375-102.000.

AMP Incorporated: *See*—
Cohen, Thomas S.; and Finan, Douglas F., 4,605,269, Cl. 339-17.0LC.
Mixon, James L., Jr., 4,605,279, Cl. 339-276.00R.

Amsted Industries Incorporated: *See*—
Altherr, Russell G., 4,605,133, Cl. 213-155.000.

Amstutz, Johann; and Wenger, Bruno, to Siemens Aktiengesellschaft. Active equalization circuit. 4,605,822, Cl. 179-16.0AA.

Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, to Gesellschaft fur Biotechnologische Forschung mbH (GBF). Process for fermenting carbohydrate- and phosphate-containing liquid media. 4,605,620, Cl. 435-148.000.

Anderson, Martin L. Carpet seam roller. 4,605,253, Cl. 294-8.600.

Anderson, Stephen W.: *See*—
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.

Andersson, Jarl A.; and Hallgren, Leif, to Alfa-Laval AB. Heat exchanger plate. 4,605,060, Cl. 165-166.000.

Ando, Masamoto; Takeuchi, Hiroaki; Yamada, Toyohisa; and Yamanaka, Toshihiko, to Aisin Seiki Kabushiki Kaisha. Antiskid control apparatus for automobiles. 4,605,263, Cl. 303-116.000.

Andorfer, Hermann, to GfE Gesellschaft fur Elektrometallurgie mbH. Method of producing titanium alloys. 4,605,436, Cl. 75-10.650.

Andreas, David W., to Golden Valley Foods Inc. Machine for forming, filling and sealing bags. 4,604,854, Cl. 53-552.000.

Andrews, George S., to Boeing Company, The. Broad band spiral antenna with tapered arm width modulation. 4,605,934, Cl. 343-895.000.

Angelosanto, John P.: *See*—
Sgourakes, George E.; Angelosanto, John P.; and Malloy, Barry T., 4,604,891, Cl. 73-4.00R.

Anguita, Waldemar. Greenhouse helmet. 4,605,000, Cl. 128-201.250.

Anisimov, Sergei I.: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Annis, James R., Jr., to Signode Corporation. Method and apparatus for feeding and tensioning strap in a strapping machine. 4,605,456, Cl. 156-157.000.

Anselment, Christoph; and Sackmann, Karl H., to Erwin Sick GmbH Optik-Elektronik. Light barrier apparatus for monitoring doorways. 4,605,850, Cl. 250-221.000.

Anspach, Charles R.: *See*—
Davis, Robert J.; Anspach, Charles R.; and Venaleck, John T., 4,605,355, Cl. 416-208.000.

Anthony, Wallace B.: *See*—
Wilbur, Leonard P., Jr.; and Anthony, Wallace B., 4,604,967, Cl. 118-668.000.

Aoi, Masahiro: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,605,706, Cl. 525-340.000.

Aoki, Tadamichi: *See*—
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.

Apollo Technologies Int'l Corp.: *See*—
Kober, Alfred E., 4,605,568, Cl. 427-220.000.

Appel, Kurt: *See*—
Emrich, Reinhard; and Appel, Kurt, 4,605,578, Cl. 428-57.000.

Applied Dynamic Research, Inc.: *See*—
Dragoo, Robert E., 4,606,023, Cl. 370-94.000.

Aprille, Thomas J., Jr.; Kuo, Yen-long; and Walker, Charles F., to AT&T Bell Laboratories. Programmable automatic cable equalizer. 4,606,043, Cl. 375-12.000.

Arai, Shigeji: *See*—
Ichikawa, Ieyasu; and Arai, Shigeji, 4,604,951, Cl. 101-153.000.

Arakawa, Makoto: *See*—
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Arakawa, Yoshio: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Araoka, Toshinobu; and Suzuki, Shigeharu, to Toyo Denki Kogyosho Co., Ltd. Device for processing fluid with solid bodies. 4,605,497, Cl. 210-111.000.

Arbed S.A.: *See*—
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.

Arbter, Conrad, to Kolb & Schule AG. Apparatus for winding up flat material webs. 4,605,179, Cl. 242-72.00B.

Archie, William A.: *See*—
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.

Arenhold, Knut. Device for fixing a mud flap to the fender fold of a motor vehicle. 4,605,238, Cl. 280-154.50R.

Arff, Heino, to ITW-Ateco GmbH. Device for tensioning belts or the like. 4,604,772, Cl. 24-68.00R.

Ari Associates, Inc.: *See*—
Kalvatn, Ivar, 4,605,334, Cl. 403-291.000.

Arikawa, Yoshijiro: *See*—
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Arjomand, Jahanbakhsh. Pitch-angle-checker (P-A-C). 4,604,812, Cl. 33-387.000.

Armeno, Michael; and Parla, Ralph L. Decorative heat retaining pizza cover. 4,605,579, Cl. 428-66.000.

Armour Pharmaceutical Company: *See*—
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,605,514, Cl. 530-307.000.
Orlowski, Ronald C.; and Stahl, Glenn L., 4,605,515, Cl. 530-307.000.

Armstrong World Industries, Inc.: *See*—
Felter, Richard E.; and Markley, Dean A., 4,605,570, Cl. 427-386.000.
Herr, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., 4,605,584, Cl. 428-142.000.

Arndt, Otto; and Papenfuhs, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of 2,6-dichloro-4-nitroaniline. 4,605,767, Cl. 564-412.000.

Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., to AT&T Technologies, Inc.; and AT&T- Bell Laboratories. Flame-resistant plenum cable and methods of making. 4,605,818, Cl. 174-107.000.

Arthroplasty Research & Development (Pty) Ltd.: *See*—
Grobbelaar, Charl J., 4,605,416, Cl. 623-23.000.

Asada, Susumu: *See*—
Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, 4,605,566, Cl. 427-43.100.

Asahi Glass Company, Ltd.: *See*—
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Shiroki, Hiroyuki; and Noaki, Yasuhide, 4,605,484, Cl. 204-290.00R.

Asahi Yukizai Kogyo Co., Ltd.: *See*—
Tsuno, Kazuhiko; and Sano, Nitiro, 4,605,202, Cl. 251-315.000.

Asai, Hideyuki: *See*—
Kumada, Shoji; and Asai, Hideyuki, 4,605,853, Cl. 250-231.0SE.

Asao, Yasuzi; and Takayanagi, Takashi, to Fuji Photo Film Co., Ltd. Support for photographic paper having electron beam cured resin layer. 4,605,612, Cl. 430-538.000.

Aschauer, George R. Marine jet propulsion unit. 4,605,376, Cl. 440-38.000.

Asea AB: *See*—
Lassander, Erik; and Stenkvist, Sven-Einar, 4,606,055, Cl. 373-108.000.

Asea Aktiebolag: *See*—
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,605,302, Cl. 356-5.000.

Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, to Volkswagenwerk Aktiengesellschaft. All-wheel drive system for vehicles. 4,605,087, Cl. 180-248.000.

Ashland Oil, Inc.: *See—*
Goel, Anil B., 4,605,746, Cl. 548-218.000.
Walters, Paul W.; Kaiche, H. Anthony; and Busch, Lloyd E., 4,605,636, Cl. 502-39.000.

Aslan, Edward E., to Narda Mircowave Corporation, The. Amplifier input circuitry with compensation for pyroelectric effects. 4,605,905, Cl. 330-9.000.

Aslizadeh, Nejdeh. Cover for electrical outlet. 4,605,270, Cl. 339-40.000.

Astafiev, Vladimir M.: *See—*
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Astrologes, Gary W., to Halocarbon Products Corp. Production of 1,1,1,3-tetrachloropropane. 4,605,802, Cl. 570-257.000.

AT&T Bell Laboratories: *See—*
Amitay, Noach; and Greenstein, Lawrence J., 4,606,054, Cl. 375-102.000.
Aprille, Thomas J., Jr.; Kuo, Yen-long; and Walker, Charles F., 4,606,043, Cl. 375-12.000.
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.
Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., 4,605,942, Cl. 357-17.000.
Cannone, Anthony G., 4,605,605, Cl. 429-174.000.
Glass, Kathleen K.; and Haas, Lawrence J., 4,606,024, Cl. 371-16.000.
Johnsen, Ottar, 4,606,069, Cl. 382-56.000.
Johnson, David W., Jr.; MacChesney, John B.; and Rabinovich, Eleizer M., 4,605,428, Cl. 65-2.000.
Ludwick, John J., 4,606,046, Cl. 375-17.000.

AT&T Technologies, Inc : *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.
Haggan, Douglas E., 4,605,844, Cl. 235-380.000.

AT&T Teletype Corporation: *See—*
Blanchard, Robert C.; and Geis, David G., 4,605,323, Cl. 400-124.000.

Atlantic Richfield Company: *See—*
Le-Khac, Bi, 4,605,700, Cl. 525-73.000.
Mazurek, Harry, 4,605,807, Cl. 585-517.000.
Senese, Frank J.; and Baillie, Lloyd A., 4,604,893, Cl. 73-49.200.

Au, Andrew T., to Dow Chemical Company, The. Acyl derivatives of tris-hydroxy-ethyl-perhydro-1,3,5-triazine. 4,605,737, Cl. 544-215.000.

Aubrey, Kenneth R., to Cubic Western Data. Easy access ticket transport. 4,605,843, Cl. 235-33.000.

Audenard, Bernard: *See—*
Marini, Jean; and Audenard, Bernard, 4,605,924, Cl. 340-683.000.

Augat Inc.: *See—*
Stokoe, Philip T., 4,605,256, Cl. 294-99.200.

Auld, David L.; and Waugh, Robert E., to D. L. Auld Company, The. Decorative emblems. 4,605,575, Cl. 428-14.000.

Automation, Inc.: *See—*
Wales, R. Langdon; and Crowley, H. W., 4,605,083, Cl. 177-122.000.

Automation Industries, Inc.: *See—*
Burns, Edgar, 4,605,271, Cl. 339-45.00M.

Autote, Alexander J.: *See—*
Haas, David J.; and Autote, Alexander J., 4,605,246, Cl. 282-29.00A.

AVA International Corp.: *See—*
Akkerman, Neil H., 4,605,064, Cl. 166-237.000.

Avery, Dennis. Tile cleaning device for removing calcium build-up in pools. 4,604,766, Cl. 15-50.00C.

Avila, Robert M.; and Hoffman, Glenn A., Jr. Punch press. 4,604,930, Cl. 83-527.000.

Baarse, Dick, to Saturn Limited. Safety device, in particular for an overhead door. 4,604,828, Cl. 49-322.000.

Baba, Yoshio; and Tsuchida, Shin, to Sumitomo Light Metal Industries, Ltd. Aluminum alloy forming sheet and method for producing the same. 4,605,448, Cl. 148-11.50A.

Babcock-Hitachi Kabushiki Kaisha: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Babcock & Wilcox Company, The: *See—*
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.
Weber, Lee A., 4,605,033, Cl. 137-84.000.

Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., to Allied Corporation. Brake booster. 4,604,870, Cl. 60-551.000.

Badin Crouzet: *See—*
Gohin, Christian; and Leblond, Henri, 4,604,898, Cl. 73-701.000.

Baggen, Constant P. M. J., to U.S. Philips Corporation. Error-correcting method and apparatus for the transmission of word-wise organized data. 4,606,026, Cl. 371-39.000.

Bahl, Hubert: *See—*
Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, 4,605,620, Cl. 435-148.000.

Baillie, Lloyd A.: *See—*
Senese, Frank J.; and Baillie, Lloyd A., 4,604,893, Cl. 73-49.200.

Baker, Maurice G., to Imperial Chemical Industries, PLC. Catalyst, production and use. 4,605,714, Cl. 526-125.000.

Baker Oil Tools, Inc.: *See—*
Klumpyan, Joseph N.; and Ross, Richard J., 4,605,062, Cl. 166-127.000.
Ross, Richard J., 4,605,063, Cl. 166-216.000.

Baker, Rodney C.; and van Rensburg, Philippus J., to AECI Limited. Insecticidal grooming article. 4,604,971, Cl. 119-86.000.

Balasubramanyan, Sugavanam; and Shephard, Margaret C., to Imperial Chemical Industries PLC. α-Benzyl-α-triazolyl pinacolone compounds. 4,605,747, Cl. 548-262.000.

Balazs, Endre A.; and Leshchiner, Adolf, to Biomatrix, Inc. Cross-linked gels of hyaluronic acid and products containing such gels. 4,605,691, Cl. 524-27.000.

Baldwin, Roger A.: *See—*
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,605,421, Cl. 44-1.00F.

Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., to Exxon Research and Engineering Co. Process for the hydrogenation of aromatic hydrocarbons. 4,605,490, Cl. 208-143.000.

Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., to British Petroleum Company p.l.c., The. Proton-catalyzed reactions catalyzed by hydrogen ion-exchanged layered clays. 4,605,806, Cl. 585-467.000.

Baltes, Herbert: *See—*
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, 4,605,809, Cl. 585-640.000.

Banks, Robert L., to Phillips Petroleum Company. Allene or alkyne treatment of olefin conversion catalysts. 4,605,810, Cl. 585-646.000.

Barbeau, Dennis E., to Teledyne Industries, Inc. Self-contained turbine engine lubrication system. 4,605,101, Cl. 184-6.110.

Barbosa, Joseph A.: *See—*
Cooper, Ellis D., 4,604,935, Cl. 84-1.010.

Bardonner, Hans: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

Barfield, Virgil H. Method and apparatus for controlling borehole pressure in perforating wells. 4,605,074, Cl. 175-4.520.

Barnes, Bruce L. Briquet starter and outdoor stove. 4,604,986, Cl. 126-25.00B.

Barnes, James M.; and Betz, Werner, to Bayer Aktiengesellschaft. Process for the production of polyetherester polyols and the products and use thereof. 4,605,729, Cl. 528-301.000.

Barnett, William W.: *See—*
Van Steenwyk, Robert A.; and Barnett, William W., 4,605,560, Cl. 424-195.100.

Barnoff, Robert M.; and Nagle, Gordon A. Continuous, precast, prestressed concrete bridge deck panel forms, precast parapets, and method of construction. 4,604,841, Cl. 52-174.000.

Baron, Arthur L.; and Sivaramakrishnan, Parameswar, to Mobay Corporation. Preparation of bis(4-hydroxyphenyl thio)benzenes. 4,605,774, Cl. 568-48.000.

Barr, John D.; and Lamb, Haydn R., to NL Industries, Inc. Drill bit manufacturing method. 4,605,157, Cl. 228-132.000.

Barth, Hermann: *See—*
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, 4,606,042, Cl. 375-2.100.

Bartholomew, Roy E., to Allied Corporation. Three way check valve. 4,605,262, Cl. 303-84.00A.

Barton, Harold A., to Owens-Illinois, Inc. Carton divider with positioning means. 4,605,158, Cl. 229-15.000.

Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, to Hoesch Aktiengesellschaft. Device for the compensating storage of packing band in packaging machines. 4,605,178, Cl. 242-55.000.

Baru, Jury A.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Barwig, Manfred: *See—*
Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, 4,606,058, Cl. 377-39.000.

Basedow, Arno: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

BASF Aktiengesellschaft: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

BASF Corporation: *See—*
Christman, Donald L., 4,605,725, Cl. 528-77.000.
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,605,666, Cl. 514-474.000.

Bastian, Donald G.; and Slepicka, Gregory L., to Harris Graphics Corporation. Quick change rotary punch. 4,604,931, Cl. 83-665.000.

Bath, Hubert M.: *See—*
Gwozdz, Peter S.; and Bath, Hubert M., 4,605,470, Cl. 156-643.000.

Bausch & Strobel Maschinenfabrik GmbH & Co.: *See*—
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, to Bausch & Strobel Maschinenfabrik GmbH & Co. Filling device for bulk material, especially liquids. 4,605,047, Cl. 141-83.000.

Baxter, Gordon D., to Northern Telecom Limited. Method for forming insulating electrical conductor. 4,605,525, Cl. 264-40.500.

Baxter Travenol Laboratories, Inc.: *See*—
Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., 4,605,503, Cl. 210-651.000.

Bayer Aktiengesellschaft: *See*—
Barnes, James M.; and Betz, Werner, 4,605,729, Cl. 528-301.000.
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,605,756, Cl. 560-351.000.
Heitz, Walter; and Koch, Wolfgang, 4,605,713, Cl. 525-537.000.
Heitz, Walter; and Koch, Wolfgang, 4,605,732, Cl. 528-388.000.

Bayrisches Druckgusswerk Thurner GmbH & Co. KG: *See*—
Thurner, Hans, 4,605,170, Cl. 239-444.000.

BCIRA: *See*—
Morley, John G., 4,605,052, Cl. 164-16.000.

Beam, Tony D. Cover member for rain gutters. 4,604,837, Cl. 52-12.000.

Beaman, Franklin D. Portable news-gathering cassette recorder having microphone talk-over capability. 4,605,975, Cl. 360-62.000.

Becatti, Jorge. Classification screen. 4,605,496, Cl. 209-394.000.

Bechtold, Thomas E.: *See*—
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., 4,605,123, Cl. 206-0.500.

Beck, Jean-Paul: *See*—
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.

Beck, Theodore R., to Rohrback Technology Corporation. Electrochemical system with rotating electrode/sparger assembly. 4,605,626, Cl. 435-291.000.

Becker, Gert, to Overbeck GmbH & Co. Process and apparatus for producing consecutive packages for drinking straws or the like. 4,604,852, Cl. 53-444.000.

Beckman Industrial Corporation: *See*—
Fiedler, Robert A., 4,605,984, Cl. 361-220.000.

Beckman Instruments, Inc.: *See*—
Naisuler, Alan C., 4,605,920, Cl. 340-347.0NT.

Becor Western Inc.: *See*—
Lang, David M.; and Lewitzke, Richard W., 4,605,257, Cl. 296-26.000.

Becton, Dickinson and Company: *See*—
Wilner, Leslie B., 4,605,919, Cl. 338-2.000.

Beene, James R.; and Bemis, Curtis E., Jr., to United States of America, Energy. Device for frequency modulation of a laser output spectrum. 4,606,031, Cl. 372-28.000.

Beg, Mirza R.; and Perl, Julius, to Imaging Technology Incorporated. Image processing-system. 4,606,065, Cl. 382-18.000.

Beissel, Timothy J.: *See*—
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Bell & Howell: *See*—
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4,604,849, Cl. 53-266.00A.

Bellina, Joseph H. Laser surgery drape. 4,604,998, Cl. 128-132.00D.

Bemis, Curtis E., Jr.: *See*—
Beene, James R.; and Bemis, Curtis E., Jr., 4,606,031, Cl. 372-28.000.

Benelli Armi S.p.A.: *See*—
Benelli, Paolo, 4,604,942, Cl. 89-185.000.

Benelli, Paolo, to Benelli Armi S.p.A. Bolt assembly with a rotating locking bolt head and a floating bolt element for automatic firearms. 4,604,942, Cl. 89-185.000.

Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Enhanced adhesion of rubber to reinforcing materials through the use of phenolic esters. 4,605,696, Cl. 524-432.000.

Bennett, Phil D.: *See*—
Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., 4,605,989, Cl. 361-433.000.

Bennett, Tommy J.: *See*—
Shih, Hung-Dah; and Bennett, Tommy J., 4,605,469, Cl. 156-610.000.

Benson, Joseph B.: *See*—
Weber, Kathleen; and Benson, Joseph B., 4,604,773, Cl. 24-71.200.

Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, to Robert Bosch GmbH. Cooled electrical circuit component, particularly switching-type semiconductor. 4,605,986, Cl. 361-386.000.

Berghagen, Nils. Shutter arrangement for use in intra-oral radiography. 4,606,063, Cl. 378-41.000.

Bergman, Roger W., to Dow Chemical Company, The. O- and S-(2-mercaptoalkyl)- mono- or dihydrocarbyl carbamothioates and S-(2-mercaptoalkyl)mono- or dihydrocarbyl carbamodithioates. 4,605,519, Cl. 558-234.000.

Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., to United States of America, Energy. Vacuum ultraviolet laser. 4,606,030, Cl. 372-5.000.

Bernardi, Roberto, to Farmaco Italiano Padil S.r.l. Compositions based on vegetable fibre and lactulose. 4,605,646, Cl. 514-53.000.

Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , to Richter Gedeon Vegyeszeti Gyar R.T. 1-(hydroxymethyl)-1,6,7,11b-tetrahydro-2H,4H-[1,3]oxazino- or -thiazino-[4,3-a]isoquinoline derivatives and pharmaceutical compositions containing them. 4,605,653, Cl. 514-226.000.

Berrebi, Georges, to Europeenne de Retraitement de Catalyseurs. Apparatus for the transportation and heating of granulated materials. 4,605,371, Cl. 432-134.000.

Berry, Gordon C.: *See*—
McKernan, Thomas J.; and Berry, Gordon C., 4,605,266, Cl. 312-219.000.

Berson, Marceau: *See*—
Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, 4,605,009, Cl. 128-660.000.

Bertoye, Andre G.: *See*—
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.

Bertoye, Renee: *See*—
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.

Besedin, Alexei N.: *See*—
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Bessinger, Walter L.; and Rutledge, Jerry D., to Knape & Vogt Manufacturing Company. Drawer slide bumper. 4,605,265, Cl. 384-20.000.

Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, to Agfa-Gevaert Aktiengesellschaft. Method of and arrangement for adjusting color saturation in a video printer. 4,605,954, Cl. 358-27.000.

Betz, Werner: *See*—
Barnes, James M.; and Betz, Werner, 4,605,729, Cl. 528-301.000.

Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., to Chevron Research Company. Conversion of synthesis gas to diesel fuel and gasoline. 4,605,680, Cl. 518-715.000.

Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., to Nauchno-Issledovatelsky Institut Prikladnykh Problem Imeni A.N. Sevchenko. Liquid crystal composition for electrooptical devices for presentation of information. 4,605,510, Cl. 252-299.660.

Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., to Nauchno-Issledovatelsky Institut Prikladnykh Fizicheskikh Problem Imeni A.N. Sevchenko. Liquid crystal 4-(4'-cyanodiphenyl) esters of trans-4''-N-alkylocyclohex-2-enecarboxylic acids. 4,605,520, Cl. 558-414.000.

Bhattacharya, Apurba, to Merck & Co., Inc. Preparation of an enantiomer of a substituted fluorenyloxyacetic acid. 4,605,760, Cl. 562-461.000.

Biber, Klaus: *See*—
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.

Biceroglu, Omer: *See*—
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., 4,605,490, Cl. 208-143.000.

Biddle, Ronald A., to Dowty Meco Limited. Scraper chain conveyor. 4,605,122, Cl. 198-834.000.

Billig, Ernst; and Stanton, David B., to Union Carbide Corporation. Reactivation of rhodium complex hydroformylation catalysts. 4,605,780, Cl. 568-454.000.

Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., to Baxter Travenol Laboratories, Inc. Single needle blood fractionation system having adjustable recirculation through filter. 4,605,503, Cl. 210-651.000.

Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, to International Business Machines Corporation. High-performance vibration filter. 4,605,194, Cl. 248-559.000.

Biogen N.V.: *See*—
Schaller, Heinz E.; and Pfaff, Eberhard P., 4,605,512, Cl. 260-112.005.

Biological & Environmental Control Laboratories, Inc.: *See*—
Kulla, James P.; and Huff, Norman J., 4,605,564, Cl. 427-2.000.

Biomatrix, Inc.: *See*—
Balazs, Endre A.; and Leshchiner, Adolf, 4,605,691, Cl. 524-27.000.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and LiCausi, Joseph M., 4,605,400, Cl. 604-319.000.

Bird Machine Company, Inc.: *See*—
Flynn, Peter J., 4,605,495, Cl. 209-211.000.

Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, to Siemens Aktiengesellschaft. Circuit arrangement for telecommunication exchange systems, particularly telephone exchange systems with switch facilities for emitting signals. 4,605,824, Cl. 179-18.0HB.

Biscione, Mario: *See*—
DeFilippis, Pietro; Salvatore, Amedeo; and Biscione, Mario, 4,605,277, Cl. 339-262.00R.

Bishop, Joseph I. Ladder base swivel with a through water channel. 4,605,096, Cl. 182-51.000.

Bjornberg, Arne; Martensson, Ulf S.; and Paulsson, Karin M., to Boliden Aktiebolag. Method for producing selenium salts. 4,605,544, Cl. 423-508.000.

Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., to University of Sheffield, The. Heart valve replacements. 4,605,407, Cl. 623-2.000.

Blanchard, Robert C.; and Geis, David G., to AT&T Teletype Corporation. Dual quality wire matrix print head. 4,605,323, Cl. 400-124.000.

Blattman, Daniel A.; and Middleton, Harold G., to Racon, Inc. Intrusion detector. 4,605,922, Cl. 340-552.000.

Blicher, Steen. Animal feeding method and apparatus. 4,604,970, Cl. 119-51.00R.

Blumenthal, Oreste. Spectacle frame with resilient hinges. 4,605,293, Cl. 351-153.000.

Board of Regents Acting For and On Behalf of the University of Michigan, The: *See—*
Curtis, M. David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, 4,605,751, Cl. 556-29.000.

Board of Trustees, University of Illinois: *See—*
Eden, James G.; McCown, Andrew W.; and Geohegan, David B., 4,606,034, Cl. 372-57.000.

Bobbola, Paolo, to Roj Electrotex S.p.A. Piezoelectric transducer for yarn feelers, for use on spinning and weaving machines. 4,605,875, Cl. 310-323.000.

Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., to Interco, Incorporated. Electronic foot measuring apparatus and method. 4,604,807, Cl. 33-3.00C.

Boden, Richard M.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.

Bodenseewerk Geratetechnic GmbH: *See—*
Ernst, Valentin, 4,606,067, Cl. 382-42.000.

Bodio, Mark: *See—*
Riddle, Herbert S.; and Bodio, Mark, 4,605,921, Cl. 340-347.0DD.

Boehringer Mannheim GmbH: *See—*
Lange, Hans; Geisler, Edda; and Werner, Wolfgang, 4,605,629, Cl. 436-166.000.

Boeing Company, The: *See—*
Andrews, George S., 4,605,934, Cl. 343-895.000.
Fernz, James A., 4,605,186, Cl. 244-110.00B.
Simpson, Frederick H.; and Verzemnieks, Juris, 4,605,588, Cl. 428-288.000.
Stephenson, Martin F., 4,605,187, Cl. 244-216.000.

Boella, Marcello; and Mariotti, Ferruccio, to Ing. C. Olivetti & C., S.p.A. Arrangement for controlling the speed and positioning of an electric motor. 4,605,887, Cl. 318-594.000.

Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., to Salk Institute for Biological Studies, The. Ovine GRF. 4,605,643, Cl. 514-12.000.

Bohlmeyer, Nicolaas: *See—*
van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, 4,606,057, Cl. 377-28.000.

Boie, Immo: *See—*
Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, 4,605,954, Cl. 358-27.000.

Boliden Aktiebolag: *See—*
Bjornberg, Arne; Martensson, Ulf S.; and Paulsson, Karin M., 4,605,544, Cl. 423-508.000.

Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, to Hoffmann-La Roche Inc. Synthetic vasoactive intestinal peptide analogs. 4,605,641, Cl. 514-12.000.

Bollinger, Dwight A.: *See—*
Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., 4,604,934, Cl. 83-880.000.

Bonaccorso, Francesco. Hydrostatic roller bearing. 4,605,317, Cl. 384-101.000.

Bone, Kendall F., to Cincinnati Milacron Inc. Spring centering device for tool spindles. 4,605,349, Cl. 409-141.000.

Bonissone, Giancarlo; and Mulas, Piero, to F.I.P. Formatura Iniezione Polimeri, S.p.A. Ball valve provided with a lock ring. 4,605,199, Cl. 251-171.000.

Bonn, Matthew A., to Advanced Micro Devices, Inc. Method of fabricating integrated circuit structure having CMOS and bipolar devices. 4,604,790, Cl. 29-576.00B.

Boos, Donald L., to Standard Oil Company, The. Method for making electrodes for double layer capacitors. 4,604,788, Cl. 29-570.000.

Boos, Donald L.: *See—*
Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., 4,605,989, Cl. 361-433.000.

Bordas, Barna: *See—*
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.

Borg-Warner Corporation: *See—*
Ribbens, William B., 4,606,005, Cl. 364-431.010.

Borin, Charles. Apparatus for automatic maintenance of surface speed and work-bearing force for rotary tool apparatus. 4,604,835, Cl. 51-165.870.

Born, Gustav V. R.: *See—*
Kratzer, Michael; and Born, Gustav V. R., 4,604,894, Cl. 73-64.100.

Borruso, Rose M.: *See—*
Russel, Matthew J.; and Borruso, Rose M., 4,605,298, Cl. 355-3.0TR.

Bost, James: *See—*
Penrice, Thomas W.; and Bost, James, 4,605,599, Cl. 428-665.000.

Bottger, Friedrich, to G. Siempelkamp GmbH & Co. Apparatus for producing steam hardened pressedboard. 4,605,467, Cl. 156-497.000.

Bourassa, Ronald R., to Inmos Corporation. Process for fabricating polysilicon resistor in polycide line. 4,604,789, Cl. 29-576.00C.

Bourdier, Brigitte E.: *See—*
Bourdier, Jean-Claude; Bourdier, Frederic G.; Bourdier, Brigitte E.; and Bourdier, Claude H., 4,605,294, Cl. 353-28.000.

Bourdier, Claude H.: *See—*
Bourdier, Jean-Claude; Bourdier, Frederic G.; Bourdier, Brigitte E.; and Bourdier, Claude H., 4,605,294, Cl. 353-28.000.

Bourdier, Frederic G.: *See—*
Bourdier, Jean-Claude; Bourdier, Frederic G.; Bourdier, Brigitte E.; and Bourdier, Claude H., 4,605,294, Cl. 353-28.000.

Bourdier, Jean-Claude; Bourdier, Frederic G.; Bourdier, Brigitte E.; and Bourdier, Claude H. Composite optical display method and related apparatus. 4,605,294, Cl. 353-28.000.

Bourne, Henry A.: *See—*
McClaflin, Gifford G.; Bourne, Henry A.; and Whitfill, Donald L., 4,605,069, Cl. 166-310.000.

Bowman, J. Robert; and Pinkham, Eleanor T., to Globe Manufacturing Company. Firefighter's suit with waterproof collar. 4,604,759, Cl. 2-81.000.

Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., to AT&T Bell Laboratories. Self-oscillating high frequency power converter. 4,605,999, Cl. 363-19.000.

Bowytz, Steven H. Double-faced adhesive tape securing system and method of using same. 4,605,577, Cl. 428-40.000.

Boyadjieff, George I., to Varco International, Inc. Top drive drilling systems. 4,605,077, Cl. 175-85.000.

Boyd, Stephen A.: *See—*
Pinnavaia, Thomas J.; Mortland, Max M.; and Boyd, Stephen A., 4,605,621, Cl. 435-177.000.

Boyd, Winnett. Brake actuator for bicycles and the like. 4,605,110, Cl. 192-5.000.

Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, to Societe Cortial. 1-cycloalkylamino-3-t-butylamino-2-propanols, a method of preparing the same, and a method of use thereof. 4,605,768, Cl. 564-461.000.

Boyer, Jon A.: *See—*
Remington, John L.; and Boyer, Jon A., 4,604,838, Cl. 52-73.000.

BP Chemicals Limited: *See—*
Green, Michael J., 4,605,769, Cl. 564-477.000.
Samson, John N. R., 4,605,808, Cl. 585-525.000.

Bracht, Roger R.: *See—*
Verboom, Johannes J.; and Bracht, Roger R., 4,606,016, Cl. 369-54.000.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Catalytic preparation of dimethyl ether. 4,605,788, Cl. 568-698.000.

Brandenstein, Manfred; and Haas, Roland, to SKF Kugellagerfabriken GmbH. Clutch release, in particular for automobile clutches. 4,605,113, Cl. 192-98.000.

Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, to SKF Kugellagerfbriken GmbH. Roller bearing for seating a pedal bearing shaft. 4,605,321, Cl. 384-512.000.

Braslau, Norman, to International Business Machines Corporation. Contactless measurement of electrical properties of wafer shaped materials. 4,605,893, Cl. 324-58.50B.

Braun Aktiengesellschaft: *See—*
Ullmann, Roland; and Heintke, Hans E., 4,604,801, Cl. 30-43.920.

Braun, Dave W.: *See—*
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, 4,605,690, Cl. 523-414.000.

Brazeau, Paul E.: *See—*
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.

Breedis, John F.: *See—*
Knorr, David B.; and Breedis, John F., 4,605,532, Cl. 420-472.000.

Brenman, Henry S.: *See—*
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.

Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, to Mobil Oil Corporation. Separation of catalyst from slurry bubble column wax and catalyst recycle. 4,605,678, Cl. 518-700.000.

Breton, Claude: *See—*
Ninane, Leon; Breton, Claude; and Guerdon, Constant, 4,605,771, Cl. 564-497.000.

Briden, Frank C., to Diamond Shamrock Chemicals Company. Polyfunctional aziridines for use in crosslinking applications. 4,605,698, Cl. 524-559.000.

Bridgestone Corporation: *See—*
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Bright Of America, Inc.: *See—*
McIntosh, Edwin J., 4,605,292, Cl. 350-641.000.

Briley, Mike: *See—*
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.

Brinker, Sheridan F. Continuous pivoted spacing tie. 4,604,845, Cl. 52-696.000.

Bristol-Myers Company: *See—*
Yevich, Joseph P.; and Lobeck, Walter G., Jr., 4,605,655, Cl. 514-252.000.

British Petroleum Company p.l.c., The: *See*—
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.

Brivio, Lodovico R.: *See*—
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.

Broer, Dirk J.; and Vriens, Leendert, to U.S. Philips Corporation. Optical recording disc. 4,606,017, Cl. 369-275.000.

Broslaw, Edwin, to Crest-Foam Corporation. Polymeric buns and method and apparatus for its manufacture. 4,605,683, Cl. 521-99.000.

Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., to U.S. Philips Corporation. Methods of manufacturing semiconductor devices. 4,605,447, Cl. 148-1.500.

Broughton, Christopher D., to Motorola, Inc. Disable circuit for a phase locked loop discriminator circuit. 4,605,908, Cl. 331-8.000.

Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, to Robert Bosch GmbH. Speed governor for fuel injection pumps. 4,604,978, Cl. 123-374.000.

Brown, Allan H. G.: *See*—
Chater, Izak; and Brown, Allan H. G., 4,605,350, Cl. 411-75.000.

Brown, Kenneth W., to Welding Institute, The. Chuck assembly. 4,605,151, Cl. 228-2.000.

Brown, Marvin R.: *See*—
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., 4,605,642, Cl. 514-12.000.

Brown, Richard I.: *See*—
Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., 4,605,503, Cl. 210-651.000.

Bruhmann, Werner: *See*—
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, 4,604,978, Cl. 123-374.000.

Bruneau, Alain, to Alpia S.A. Anti-fail device for locking a drawing-board pillar against motion. 4,605,189, Cl. 248-162.100.

Brunelle, Daniel J.; and Singleton, Daniel A., to General Electric Company. N-neopentyl-4-diorganoamino pyridinium compounds. 4,605,745, Cl. 546-304.000.

Brustle, Klaus: *See*—
Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, 4,604,769, Cl. 16-238.000.

Bryant, Malcolm E.: *See*—
Camm, Samuel A.; and Bryant Malcolm E., 4,605,380, Cl. 446-14.000.

BTR plc.: *See*—
Grey, Peter J.; and Gardner, Kevin, 4,605,681, Cl. 521-51.000.

Buchman, Ouri; and Pri-Bar, Ilan, to State of Israel, Prime Minister's Office, Atomic Energy Commission. Production of aldehydes. 4,605,749, Cl. 549-70.000.

Buckley, Alan: *See*—
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, 4,605,573, Cl. 427-424.000.

Budra Research Ltd.: *See*—
Rao, Dandina N., 4,604,988, Cl. 126-360.00A.

Buehl, Arnold L., to Slyman Manufacturing Corporation. Radiant burner. 4,605,369, Cl. 431-328.000.

Buehler, John D.; Medal, Hans J.; and Rhoa, Gregory A., to William H. Rorer, Inc. Dry oil coated antacid process. 4,605,551, Cl. 424-38.000.

Buhne, Gerd: *See*—
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,605,178, Cl. 242-55.000.

Build-A-Sign, Inc.: *See*—
Edman, David C., 4,604,820, Cl. 40-605.000.

Bukovitz, Ronald F.; and Vliet, Walter C., to Ingersoll-Rand Company. Carriage feed system. 4,605,078, Cl. 175-162.000.

Bulginov, Evgeny F.: *See*—
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Taernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.

Bullinger, Siegfried: *See*—
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Bullitt, Julian G., to Polaroid Corporation. Image-receiving element with crosslinked hydrophilic polymer containing processing composition. 4,605,608, Cl. 430-206.000.

Bullivant, Roger A., to Roger Bullivant of Texas, Inc. Situ pile construction in ground liable to uplift. 4,605,339, Cl. 405-237.000.

Burandt, Wesley A., to Sundstrand Corporation. Integrated power drive and power transfer system. 4,605,358, Cl. 417-236.000.

Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., to Sohio Alternate Energy Development Co. Multistream, multiproduct, pressure manipulation beneficiation arrangement. 4,605,494, Cl. 209-166.000.

Burkhart, Richard P.; and Gemperle, Edward C., to Drackett Company, The. Wringer mop. 4,604,767, Cl. 15-119.00A.

Burlington Industries, Inc.: *See*—
Pritchard, Frederick D.; and Pittard, John E., 4,605,310, Cl. 366-142.000.

Burndy Corporation: *See*—
Collier, John C.; and Lehman, David L., 4,604,795, Cl. 29-748.000.

Burnham, Robert D.: *See*—
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,606,032, Cl. 372-38.000.

Burns, Edgar, to Automation Industries, Inc. Remote quick disconnect for breech-lok. 4,605,271, Cl. 339-45.00M.

Burns, Michael E.: *See*—
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,605,509, Cl. 252-131.000.

Burns, Richard H., to Rockwell International Corporation. Coherent light vergence varying apparatus. 4,605,290, Cl. 350-619.000.

Burroughs Corporation: *See*—
Perloff, Ronald S., 4,606,056, Cl. 375-110.000.
Vallance, Leslie, 4,604,929, Cl. 83-524.000.

Burton, Guy C., Jr., to Burton, ReJane M., a part interest. Method and apparatus for completing well. 4,605,067, Cl. 166-285.000.

Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., to Hydril Company. Annular blowout preventer packing unit. 4,605,195, Cl. 251-1.200.

Burton, ReJane M.: *See*—
Burton, Guy C., Jr., 4,605,067, Cl. 166-285.000.

Busch, Edgar; and Albrecht, Ernst, to Pfaff Industriemaschinen GmbH. Feed drive for the work holder of a zig-zag sewing machine. 4,604,958, Cl. 112-443.000.

Busch, Lloyd E.: *See*—
Walters, Paul W.; Raiche, H. Anthony; and Busch, Lloyd E., 4,605,636, Cl. 502-39.000.

Busch, Walter: *See*—
Bausch, Wilhelm L.; Strobel. Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Butscher, Frank D.; and Gegan, Michael J., to United States of America, Navy. Nested microstrip arrays. 4,605,932, Cl. 343-700.0MS.

Butscher, Frank D., to United States of America, Navy. Extended bandwidth microstrip antenna. 4,605,933, Cl. 343-700.0MS.

Buzzelli, Edward S.: *See*—
Pollack, William; and Buzzelli, Edward S., 4,605,604, Cl. 429-116.000.

Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., to Medtronic, Inc. Method for fabricating prosthesis material. 4,605,406, Cl. 623-1.000.

Cain Encoder Company: *See*—
Wason, Thomas D., 4,606,008, Cl. 364-560.000.

Calwag S.A.: *See*—
Debetencourt, Jean, 4,605,136, Cl. 215-232.000.

Camco, Incorporated: *See*—
Morris, Arthur J., 4,605,070, Cl. 166-380.000.

Camillo Corvi S.p.A.: *See*—
Corvi Mora, Camillo, 4,605,792, Cl. 568-823.000.

Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., to AT&T Bell Laboratories. Multiple wavelength light emitting devices. 4,605,942, Cl. 357-17.000.

Camm, Samuel A.; and Bryant, Malcolm E., to Camm, Samuel A. Heartbeat doll. 4,605,380, Cl. 446-14.000.

Campbell, Carl M., Jr., to VISA U.S.A. Inc. Key management system for on-line communication. 4,605,820, Cl. 178-22.090.

Campbell Soup Company: *See*—
Goldhahn, Stephen L., 4,604,948, Cl. 99-470.000.

Canadian General Electric Co., Ltd.: *See*—
Mark, James S., 4,605,925, Cl. 340-870.290.

Cannon Rug Company: *See*—
Goolsby, Thomas C.; and Sanford, Dock, 4,605,580, Cl. 428-92.000.

Cannondale Corporation: *See*—
Graham, David R., 4,605,241, Cl. 280-281.00R.

Cannone, Anthony G., to AT&T Bell Laboratories. Lead-acid battery having positive posts of lead-tin alloy. 4,605,605, Cl. 429-174.000.

Canon Kabushiki Kaisha: *See*—
Fujiwara, Ryoji; and Shimizu, Isamu, 4,605,285, Cl. 350-357.000.
Iida, Fumio, 4,605,593, Cl. 428-352.000.
Miyagi, Ken, 4,605,884, Cl. 318-314.000.
Sonobe, Hiraku, 4,605,211, Cl. 270-53.000.
Sumi, Akiyasu, 4,605,286, Cl. 350-429.000.

Carl Schmale GmbH & Co. KG: *See*—
Freermann, Johannes, 4,604,926, Cl. 83-18.000.

Carl-Zeiss-Stiftung: *See*—
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.
Leitz, Helmut; and Rometsch, Gunter, 4,605,304, Cl. 356-138.000.

Carle, Pierre R., to Roussel Uclaf. Synergistic pesticidal compositions of (S)α-cyano-3-phenoxy-benzyl (1R,cis) 2,2-dimethyl-3-(2,2-dibromovinyl)-cyclopropane-1-carboxylate and (R,S) allethronyl d-trans chrysanthemate. 4,605,549, Cl. 424-18.000.

Carlson, Curtis R.: *See*—
Reitmeier, Glenn A.; and Carlson, Curtis R., 4,605,963, Cl. 358-141.000.

Carmien, Joseph A. Reinforced handle and method of making same. 4,605,254, Cl. 294-57.000.

Carp, Ralph W.; Weber, Robert E.; and Wright, Danny O. Analog duty cycle to BCD converter. 4,604,983, Cl. 123-571.000.

Carpentier, Alain, to Universite Pierre et Marie Curie Paris VI. Artificial cardiac valve with active opening. 4,605,408, Cl. 623-2.000.

Carre, Jean-Jacques; and Escarabajal, Ghislain, to Societe Anonyme D.B.A. Multi-disc brake. 4,605,103, Cl. 188-71.500.

Carreras, Michelle. Device for the automatic contactless measurement of the volume of a layer deposited on a substrate. 4,604,892, Cl. 73-37.500.

Carson Products Company: *See*—
de la Guardia, Mario; and Hendrix, Charles R., Jr., 4,605,018, Cl. 132-7.000.

Carsonite International Corporation: *See*—
Schmanski, Donald W.; and Landis, Scott, 4,605,204, Cl. 256-19.000.

Cartisano, Roberto: *See—*
Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, 4,604,808, Cl. 33-143.00M.
Cascade Corporation: *See—*
Olson, John E., 4,605,255, Cl. 294-67.330.
Casco Products Inc.: *See—*
Lupoli, Peter J., 4,604,864, Cl. 60-290.000.
Casey, Gerald F.; and Schultz, Richard A., to Fema Corporation. Proportional and latching pressure control device. 4,605,197, Cl. 251-30.010.
Cassatta, Joseph C.: *See—*
Chattha, Mohinder S.; and Cassatta, Joseph C., 4,605,720, Cl. 524-504.000.
Caterpillar Inc.: *See—*
Tonsor, Andrew J., 4,605,264, Cl. 305-47.000.
Cavallera, Giorgio: *See—*
Giordanengo, Giovanni; and Cavallera, Giorgio, 4,605,049, Cl. 144-144.00R.
CBS Inc.: *See—*
Goldberg, Abraham A.; McMann, Renville H.; and Rossi, John P., 4,605,950, Cl. 358-11.000.
Cederquist, Karl N., to Sunds Defibrator AB. Method for wet combustion of organic material. 4,604,957, Cl. 110-238.000.
Celanese Corporation: *See—*
Choe, Eui W., 4,605,869, Cl. 307-425.000.
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, 4,605,573, Cl. 427-424.000.
Morgan, Michael E., 4,605,736, Cl. 536-114.000.
Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., 4,605,607, Cl. 430-17.000.
Roth, Douglas D.; and Ethridge, Fredrick A., 4,605,364, Cl. 425-72.00S.
Tau, Kwoliang D., 4,605,781, Cl. 568-454.000.
Celanese Mexicana S.A.: *See—*
Mandoki, Jorge W., 4,605,762, Cl. 562-483.000.
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Nocardia species capable of producing nargenicin C_1. 4,605,624, Cl. 435-253.000.
Centre National de la Recherche Scientifique: *See—*
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.
Cerkanowicz, Anthony E., to Exxon Research and Engineering Co. Charge injection device. 4,605,485, Cl. 204-302.000.
Ceskoslovenska Akademie Ved.: *See—*
Holy , Antonin; and de Clercq, Erik, 4,605,658, Cl. 514-261.000.
Chadwick, Curt H.; and Desai, Anil A., to KLA Instruments Corporation. Apparatus for accurately positioning an object at each of two locations. 4,604,910, Cl. 74-96.000.
Chan, Wan-Kit: *See—*
Loev, Bernard; and Chan, Wan-Kit, 4,605,675, Cl. 514-720.000.
Chandler Evans Inc.: *See—*
Sundberg, Jack G.; and Haynes, Paul L., Jr., 4,605,235, Cl. 277-87.000.
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., to Mobil Oil Corporation. Hydrothermal activation of acid zeolites with aluminum phosphates. 4,605,637, Cl. 502-64.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,605,803, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,605,804, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,605,805, Cl. 585-415.000.
Chang, Wen-Hsuan: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,605,724, Cl. 528-73.000.
Chard, Frederick W. Method and apparatus for editing the output of a television set. 4,605,964, Cl. 358-147.000.
Chater, Izak; and Brown, Allan H. G. Expansion shell. 4,605,350, Cl. 411-75.000.
Chattha, Mohinder S.; and Cassatta, Joseph C., to Ford Motor Company. Preparation of nonaqueous dispersions with the use of monofunctional stabilizer. 4,605,720, Cl. 524-504.000.
Chattler, Leo M., to DCM Industries, Inc. Line fault discriminator. 4,605,827, Cl. 179-175.30F.
Chemische Fabrik Stockhausen GmbH: *See—*
Chmelir, Miroslav; and Kunschner, Alois, 4,605,401, Cl. 604-368.000.
Landscheidt, Alfons, 4,605,740, Cl. 544-376.000.
Chen, Lih-Ji. Electric air preheater for an internal combustion engine. 4,605,837, Cl. 219-206.000.
Chen, Sen-Tsuen: *See—*
Winbow, Graham A.; and Chen, Sen-Tsuen, 4,606,014, Cl. 367-75.000.
Chenoweth, John S.: *See—*
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., to Mobil Oil Corporation. Catalytic dewaxing of light and heavy oils in dual parallel reactors. 4,605,488, Cl. 208-78.000.
Chester, Arthur W.: *See—*
Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, 4,605,678, Cl. 518-700.000.
Chevron Research Company: *See—*
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.
Dimpfl, William L., 4,605,535, Cl. 422-95.000.
Edwards, Laroy H., 4,605,657, Cl. 514-259.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.
Chikamori, Sunao: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.
Chin, Aland K.: *See—*
Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., 4,605,942, Cl. 357-17.000.
Chin, Brymer H.: *See—*
Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., 4,605,942, Cl. 357-17.000.
Chiu, Norman H.; and Schneider, David A., to General Electric Company. Over-temperature warning system for refrigerator appliance. 4,604,871, Cl. 62-130.000.
Chive, Maurice: *See—*
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, 4,605,012, Cl. 128-804.000.
Chlorine Engineers Corp., Ltd.: *See—*
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.
Chmelir, Miroslav; and Kunschner, Alois, to Chemische Fabrik Stockhausen GmbH. Material for the absorption of water, aqueous solutions and aqueous body fluids. 4,605,401, Cl. 604-368.000.
Cho, Hidetsura: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.
Cho, Timothy C.; and Lohrey, Edwin J., to General Electric Company. Mounting structure for multi-filaments of an incandescent lamp. 4,605,877, Cl. 313-272.000.
Choe, Eui W., to Celanese Corporation. Polyacetylenic compositions. 4,605,869, Cl. 307-425.000.
Christ, Alfred: *See—*
Lehmann, Rolf; and Christ, Alfred, 4,605,366, Cl. 425-143.000.
Christenberry, S. Kent. Fishing lure holder. 4,604,822, Cl. 43-57.100.
Christensen, Vern L., to North Carolina State University. Increasing the efficiency of poultry production. 4,604,968, Cl. 119-1.000.
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., to PPG Industries, Inc. Cationic electrodepositable compositions containing formaldehyde scavenger. 4,605,478, Cl. 204-181.700.
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., to Diamond Shamrock Chemicals Company. Aftertreatment of dyed cellulosic materials. 4,605,418, Cl. 8-192.000.
Christman, Donald L., to BASF Corporation. Polyurethane sealant compositions and their use as thermal-break sealants. 4,605,725, Cl. 528-77.000.
Christopher, Todd J.; and Fling, Russell T., to RCA Corporation. Progressive scan television system with video compression exceeding display line rate. 4,605,962, Cl. 358-140.000.
Chrysler Corporation: *See—*
Dolan, Courtney F., 4,604,908, Cl. 74-15.880.
Chu, Pochen; and Kuehl, Guenter H., to Mobil Oil Corporation. Process for the preparation of alkyl tert-alkyl ethers. 4,605,787, Cl. 568-697.000.
Chu, Yung-Feng: *See—*
Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, 4,605,678, Cl. 518-700.000.
Chung, Ding-Yu: *See—*
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, 4,605,690, Cl. 523-414.000.
Ciba-Geigy Corporation: *See—*
Fringeli, Werner, 4,605,511, Cl. 252-301.210.
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., 4,605,665, Cl. 514-431.000.
Maier, Ludwig, 4,605,434, Cl. 71-94.000.
Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., 4,605,712, Cl. 525-474.000.
Puck, Alfred; and Voirol, Peter, 4,605,385, Cl. 464-181.000.
Spivack, John D.; and Ravichandran, Ramanathan, 4,605,692, Cl. 524-117.000.
Cincinnati Milacron Inc.: *See—*
Bone, Kendall F., 4,605,349, Cl. 409-141.000.
Citizen Watch Co., Ltd.: *See—*
Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, 4,604,833, Cl. 51-165.800.
Urushida, Yoshihisa, 4,605,034, Cl. 137-88.000.
Claas Ohg: *See—*
Clostermeyer, Gerhard, 4,604,848, Cl. 53-118.000.
Clark, Charles A., Jr.: *See—*
Ogle, Dennis F.; Clark, Charles A., Jr.; and Aires, Ramon H., 4,605,890, Cl. 323-209.000.
Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., to Ford Aerospace & Communications Corp. Telescoped ammunition with dual split cartridge case. 4,604,954, Cl. 102-434.000.
Claude, S.A.: *See—*
Huvet, Jean-Marie; and Serrie, Gerard J., 4,605,981, Cl. 361-91.000.

Claxton, Richard L.: *See—*
Springston, Preston S.; and Claxton, Richard L., 4,605,337, Cl. 404-35.000.

Clem, William E.; and Trethewey, William C., to Telewe', Inc. Electronically controlled bicycle transmission. 4,605,240, Cl. 280-236.000.

Clevepak Corporation: *See—*
Sprang, Richard W., 4,604,763, Cl. 4-391.000.

Clostermeyer, Gerhard, to Claas Ohg. Large baling press. 4,604,848, Cl. 53-118.000.

Cockroft, James B., to Sunbeam Corporation. Motor speed control circuit. 4,605,883, Cl. 318-312.000.

Cogelia, Nicholas J.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.

Cohen, Edward, to RCA Corporation. Method for avoiding identifying perimeter variations as blemishes in a CCD image. 4,605,960, Cl. 358-106.000.

Cohen, Thomas S.; and Finan, Douglas F., to AMP Incorporated. Printed circuit board header having coaxial sockets therein and matable coaxial plug housing. 4,605,269, Cl. 339-17.0LC.

Coin, Sheri K. Bridal headdress apparatus. 4,604,760, Cl. 2-209.200.

Cok, David R., to Eastman Kodak Company. Single-chip electronic color camera with color-dependent birefringent optical spatial frequency filter and red and blue signal interpolating circuit. 4,605,956, Cl. 358-44.000.

Colbaugh, Michael E., to Westinghouse Electric Corp. Portable communications terminal. 4,605,959, Cl. 358-93.000.

Colgate-Palmolive Company: *See—*
Wixon, Harold E., 4,605,506, Cl. 252-8.750.

Collet, Pierre D.: *See—*
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., 4,605,697, Cl. 534-648.000.

Colleter, Jean C.: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.

Collier, Byron T.: *See—*
Vanderlinde, Leendert A.; and Collier, Byron T., 4,605,120, Cl. 198-781.000.

Collier, John C.; and Lehman, David L., to Burndy Corporation. Apparatus for installing terminals on wires and insulation pods on terminals. 4,604,795, Cl. 29-748.000.

Collins, Mark C., to Sony Corporation. Error concealment in digital television signals. 4,605,966, Cl. 358-160.000.

Colman, William P.: *See—*
Witheford, John M.; Pellon, Joseph J.; and Colman, William P., 4,605,689, Cl. 523-313.000.

Colombo, Paolo: *See—*
Zagnoli, Giorgio; Conte, Ubaldo; and Colombo, Paolo, 4,605,741, Cl. 546-24.000.

Colvin, Kenneth W.: *See—*
Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., 4,605,195, Cl. 251-1.200.

Combustion Engineering, Inc.: *See—*
Maliszewski, Theodore V.; and Kohler, David E., 4,605,174, Cl. 241-52.000.
Rankin, Arthur L., III, 4,604,781, Cl. 29-402.070.

Commissariat a l'Energie Atomique: *See—*
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.
Saglio, Robert, 4,604,897, Cl. 73-626.000.

Commonwealth of Australia, The: *See—*
Spear, Robert J.; and Redman, Lance D., 4,605,453, Cl. 149-24.000.

Competition Aircraft, Inc.: *See—*
Davis, Robert J.; Anspach, Charles R.; and Venaleck, John T., 4,605,355, Cl. 416-208.000.

Complex, Inc.: *See—*
Weston, Robert E.; and Hunter, Robert R., III, 4,605,399, Cl. 604-305.000.

Concrete Pipe and Products Corp.: *See—*
Melfi, Nicholas W., 4,605,090, Cl. 181-210.000.

Conn, David R., to Northern Telecom Limited. D.C. biassing of MESFETs to prevent oscillation during power supply switching. 4,605,866, Cl. 307-296.00R.

Conoco Inc.: *See—*
McClaflin, Gifford G.; Bourne, Henry A.; and Whitfill, Donald L., 4,605,069, Cl. 166-310.000.

Conte, Ubaldo: *See—*
Zagnoli, Giorgio; Conte, Ubaldo; and Colombo, Paolo, 4,605,741, Cl. 546-24.000.

Continental Plastic Containers: *See—*
Hellmer, Ernest W.; and Pfohl, Frank W., 4,605,368, Cl. 425-195.000.

Control Data Corporation: *See—*
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.

Cook, Ronald, to Tools & Machinery Builders, Inc. Apparatus for flanging can ends. 4,605,391, Cl. 493-159.000.

Cook, Stuart A.; Reed, Phillip G.; and Scarpa, Michael C., to CPG Products Corp. Figure wherein leg movement produces wing-like movement of arms. 4,605,382, Cl. 446-330.000.

Cooley, Harold J.: *See—*
Dilanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.

Cooper, Ellis D., to Barbosa, Joseph A. Apparatus and method for processing audio signals. 4,604,935, Cl. 84-1.010.

Cooper Lipotech Inc.: *See—*
Kung, Viola T.; Martin, Francis J.; and Vollmer, Yolanda P., 4,605,630, Cl. 436-511.000.

Cordray, Robert K. Oscillating vane rotary pump or motor. 4,605,361, Cl. 418-38.000.

Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., to Procter & Gamble Company, The. Detergent compositions containing sodium aluminosilicate builders. 4,605,509, Cl. 252-131.000.

Corning Glass Works: *See—*
DeAngelis, Thomas P., 4,605,633, Cl. 501-87.000.
DeAngelis, Thomas P., 4,605,634, Cl. 501-96.000.
Elmer, Thomas H., 4,605,632, Cl. 501-54.000.
MacDowell, John F., 4,605,443, Cl. 106-104.000.
Rajnik, Lawrence S., 4,605,429, Cl. 65-105.000.

Corvi Mora, Camillo, to Camillo Corvi S.p.A. Derivative of (−)-6,6-dimethylbicyclo[3.3.1]ept-2-ene-2-methanol having mucosecretolytic activity, a process for its preparation and pharmaceutical compositions thereof. 4,605,792, Cl. 568-823.000.

Coulahan, John F.: *See—*
Stenger, Donald D.; and Coulahan, John F., 4,605,156, Cl. 228-127.000.

Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, to P. F. Medicament. 2-(arylalkyloxymethyl)morpholines and the central nervous system compositions. 4,605,654, Cl. 514-237.000.

Cover, Craig H. Lighting fixture insulation. 4,605,992, Cl. 362-147.000.

Covill, Dennis H., to Nautical Electronic Laboratories Limited; and Tantallon Halifax Co. AM pulse duration modulator. 4,605,910, Cl. 332-9.00R.

Cox, Gerald; and DeHaven, Bill, to GenRad Semiconductor Test, Inc. High density test head. 4,605,894, Cl. 324-73.00R.

Cox, Randall A.: *See—*
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.

Coyle, Joseph P.: *See—*
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,605,595, Cl. 428-413.000.

CPG Products Corp.: *See—*
Cook, Stuart A.; Reed, Phillip G.; and Scarpa, Michael C., 4,605,382, Cl. 446-330.000.

Crabtree, Steven B.; Yedid, Harry; and Sherman, James B., to Universal Data Systems, Inc. QPSK demodulator with I and Q post-detection data correction. 4,606,051, Cl. 375-86.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Use of substituted-3-(2,3-dihydro-1H-inden-5-yl)-4-hydroxy-1H-pyrrole-2,5-diones, for treatment of grey matter edema. 4,605,663, Cl. 514-425.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Use of substituted-3-(2,3-dihydro-1H-inden-5-yl)-4-hydroxy-1H-pyrrole-2,5-diones for treatment of grey matter edema. 4,605,664, Cl. 514-425.000.

Craigave Pty. Ltd.: *See—*
Grey, George E., 4,604,819, Cl. 40-1.500.

Crawford, Carl R.; and Acharya, Kishore C., to General Electric Company. Apparatus for reduction of filtration truncation errors. 4,606,004, Cl. 364-414.000.

Creed, David M.: *See—*
Wilkinson, James H.; and Creed, David M., 4,605,953, Cl. 358-24.000.

Crest-Foam Corporation: *See—*
Broslaw, Edwin, 4,605,683, Cl. 521-99.000.

Creuzet, Marie-Helene: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.

Crider, Grantlin W. Emergency ventilator opener for livestock houses. 4,605,162, Cl. 236-49.000.

Crist, Owen K.: *See—*
Leibee, Donald L.; and Crist, Owen K., 4,605,079, Cl. 175-410.000.

Crow, Douglas J.: *See—*
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.

Crowley, H. W.: *See—*
Wales, R. Langdon; and Crowley, H. W., 4,605,083, Cl. 177-122.000.

Crowley, Michael J.; Dornbusch, Arthur H.; and Green, Paul J., to Procter & Gamble Company, The. Dispensing container for stick-solids. 4,605,330, Cl. 401-68.000.

Crown Creative Industries: *See—*
Payne, William J., 4,605,996, Cl. 362-352.000.

Crozier, Ronald D. G. Industrial process for the manufacture of alkyl xanthogen formates. 4,605,518, Cl. 558-244.000.

Crum, Wesley W.; and Fraley, Gary L. Bracket means providing full collapsibility to sawhorses. 4,605,099, Cl. 182-155.000.

Cubic Corporation: *See—*
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.

Cubic Western Data: *See—*
Aubrey, Kenneth R., 4,605,843, Cl. 235-33.000.

Cucchi, Giovanni; and Cucchi, Pietro, to F. lli Cucchi S.r.l. Control device for the opening and closing of the metal bar sliding guides in an equipment for the feeding of metal bars to a multiple-spindle lathe. 4,604,924, Cl. 82-27.000.

Cucchi, Pietro: *See—*
Cucchi, Giovanni; and Cucchi, Pietro, 4,604,924, Cl. 82-27.000.
Cudennec, Claude: *See—*
Lavielle, Gilbert; and Cudennec, Claude, 4,605,647, Cl. 514-85.000.
Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,605,624, Cl. 435-253.000.
Curry, Kris B.: *See—*
Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., 4,604,934, Cl. 83-880.000.
Curtis, M. David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, to Board of Regents Acting For and On Behalf of the University of Michigan, The. Bimetallic cluster catalysts. 4,605,751, Cl. 556-29.000.
Cuscovitch, John F.: *See—*
Krieger, George H., 4,604,805, Cl. 30-330.000.
Czabaffy, Andras: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.
Czajka, John. Reconstruction of a cruciate ligament. 4,605,414, Cl. 623-13.000.
Czajkowski, Albert J.: *See—*
Schafer, David E.; and Czajkowski, Albert J., 4,605,431, Cl. 71-87.000.
D. L. Auld Company, The: *See—*
Auld, David L.; and Waugh, Robert E., 4,605,575, Cl. 428-14.000.
Dacar, Arlen M. Self-targeting electrical outlet box. 4,605,139, Cl. 220-3.400.
D'Agosta, Nino. Exercise method and apparatus. 4,605,221, Cl. 272-117.000.
Dai-Ichi High Frequency Co., Ltd.: *See—*
Kawanami, Shumpei; and Nakama, Hiroshi, 4,604,813, Cl. 33-529.000.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Watanabe, Akio; and Goto, Sumio, 4,605,571, Cl. 427-387.000.
Daido Tokushuko Kabushiki Kaisha: *See—*
Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, 4,605,437, Cl. 75-43.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Yamada, Mitsuhiko, 4,605,957, Cl. 358-78.000.
Dakin, James T., to General Electric Company. High pressure sodium iodide arc lamp with excess iodine. 4,605,881, Cl. 313-638.000.
Dalebout, Melvin W.: *See—*
Sias, Ralph M.; Hurley, Nancy J.; and Dalebout, Melvin W., 4,605,582, Cl. 428-120.000.
Dall'oro, Guido G.: *See—*
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.
Dallot, Mario, to Ultrasons Annemasse. Apparatus for cleaning a linear object in a solvent medium. 4,605,027, Cl. 134-108.000.
Daly, Timothy P., to International Business Machines Corporation. Slip sensitive robot gripper system. 4,605,354, Cl. 414-730.000.
Daney, Georges J., to Service National Electricite de France. Electric vapor boiler. 4,605,838, Cl. 219-319.000.
Daniel, Richard A., to United States of America, Navy. Remote transmitter control system. 4,606,049, Cl. 375-45.000.
Daniels, Edward P., to Pitney Bowes Inc. Mailing system peripheral interface with replaceable prom for accessing memories. 4,606,003, Cl. 364-200.000.
Danker, Frederick J., to Danker Laboratories, Inc. Method and master-die for casting a bifocal contact lens in a single piece. 4,605,524, Cl. 264-2.500.
Danker Laboratories, Inc.: *See—*
Danker, Frederick J., 4,605,524, Cl. 264-2.500.
Dansky, Allan H.; and Norsworthy, John P., to International Business Machines Corporation. High speed low power current controlled gate circuit. 4,605,870, Cl. 307-443.000.
Derby, Nicholas; and Dunmore, Gordon C., to Dow Chemical Company, The. Process for preparing N-alkane-N-alkanolamines. 4,605,772, Cl. 564-503.000.
Darlington, William B.; and Hoelscher, Charles H., to PPG Industries, Inc. Method for producing sodium dithionite. 4,605,545, Cl. 423-516.000.
Daugherty, John W., to Inmont Corporation. Quick drying fountain solutions. 4,604,952, Cl. 101-451.000.
Daulton, Richard R.: *See—*
Gusching, Nagle V.; and Daulton, Richard R., 4,604,810, Cl. 33-178.00E.
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., to U.S. Philips Corporation. Transmitting-receiving station for a system for transmitting data by frequency hopping. 4,606,040, Cl. 375-1.000.
Davis, J. Stanley: *See—*
Radford, Steven R.; and Davis, J. Stanley, 4,605,075, Cl. 175-58.000.
Davis, Robert J.; Anspach, Charles R.; and Venaleck, John T., to Competition Aircraft, Inc. Propeller. 4,605,355, Cl. 416-208.000.
Davis, Walter L., to Motorola, Inc. Communication receiver system having a voltage converter with an operating frequency below the receiver IF. 4,606,076, Cl. 455-343.000.
Davison, George G. Gaiter rands. 4,604,816, Cl. 36-1.500.
Day, James L. Air blending apparatus for heating, ventilating and air conditioning (HVAC). 4,605,160, Cl. 236-13.000.
Dazzi, Jean-Louis. Injection timing device. 4,604,981, Cl. 123-451.000.
DCM Industries, Inc.: *See—*
Chattler, Leo M., 4,605,827, Cl. 179-175.30F.
de la Guardia, Mario; and Hendrix, Charles R., Jr., to Carson Products Company. Method of treating hair and anhydrous composition related thereto. 4,605,018, Cl. 132-7.000.
de la Hamette, Jean: *See—*
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.
DeAngelis, Thomas P., to Corning Glass Works. Reaction sintered multiphase ceramic. 4,605,633, Cl. 501-87.000.
DeAngelis, Thomas P., to Corning Glass Works. Reaction sintered oxide-boride. 4,605,634, Cl. 501-96.000.
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, to Orthofix S.r.l. Articulated mini external fixation device. 4,604,997, Cl. 128-92.00A.
Debetencourt, Jean, to Calwag S.A. Seal with tear lip for containers. 4,605,136, Cl. 215-232.000.
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, to Inmont Corporation. Low volatile organic content cathodic electrodeposition baths. 4,605,690, Cl. 523-414.000.
Debus, Jurgen; and Ehrhardt, Claus-Dieter, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Utility table for attachment to a vertical wall, particularly of a switch cabinet. 4,605,131, Cl. 211-90.000.
DeCaro, Charles J., to Textron Inc. Quick release adapter. 4,605,348, Cl. 408-239.00A.
de Clercq, Erik: *See—*
Holy , Antonin; and de Clercq, Erik, 4,605,658, Cl. 514-261.000.
De Clue, Larry W.: *See—*
Price, John E.; and De Clue, Larry W., 4,605,871, Cl. 307-455.000.
Decoux, Pierre. Process and device for feeding machines for welding wire mesh with weft wires. 4,605,046, Cl. 140-112.000.
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, to Celanese Corporation. Methods and apparatus for applying a finish liquid to a bundle of filmentary material. 4,605,573, Cl. 427-424.000.
Defeuilly, Jean-Pierre M.: *See—*
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., 4,606,040, Cl. 375-1.000.
Deffeyes, Robert J., to Graham Magnetics Incorporated. Forming terminations of MLC capacitors. 4,605,835, Cl. 219-85.0BM.
DeFilippis, Pietro; Salvatore, Amedeo; and Biscione, Mario, to Texas Instruments Incorporated. Connector and method of making. 4,605,277, Cl. 339-262.00R.
Degtev, Evgeny I.: *See—*
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.
Degussa Aktiengesellschaft: *See—*
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, 4,605,795, Cl. 568-867.000.
Dehais, Claude. Apparatus for depositing a ring of material on the tips of ampoules or the like. 4,604,965, Cl. 118-219.000.
DeHaven, Bill: *See—*
Cox, Gerald; and DeHaven, Bill, 4,605,894, Cl. 324-73.00R.
Delaroche, Pierre: *See—*
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., to Monsanto Europe S. A. Rubber/metal composites. 4,605,590, Cl. 428-295.000.
DeLuca, Frederick P. Electronic jewelry simulating natural flickering light. 4,605,882, Cl. 315-158.000.
Demukai, Noboru: *See—*
Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, 4,605,437, Cl. 75-43.000.
Denes, Laszlo : *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Dent, John N.: *See—*
Hanning, Bernard W.; and Dent, John N., 4,605,214, Cl. 271-3.100.
Derman, Robert I.: *See—*
Sturgeon, Gerald E.; and Derman, Robert I., 4,605,362, Cl. 418-63.000.
Desai, Anil A.: *See—*
Chadwick, Curt H.; and Desai, Anil A., 4,604,910, Cl. 74-96.000.
Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, to Internationale Octrooi Maatschapij "Octropa" B.V. Cylindrical container. 4,605,129, Cl. 206-623.000.
Devaux, Albert F.: *See—*
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., 4,605,590, Cl. 428-295.000.
Deveau, Emile J.: *See—*
Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., 4,605,931, Cl. 343-700.0MS.
Devon Industries, Inc.: *See—*
Sandel, Dan; and Hoftman, Michael, 4,605,124, Cl. 206-223.000.
Dewald, Lamar R., to Dow Chemical Company, The. Hypochlorite activated gold electrode and measuring system and method. 4,605,473, Cl. 204-1.00T.
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, to General Motors Corporation. Material pick-up mechanism. 4,605,216, Cl. 271-18.300.
DeYoung, Joyce L., to American Home Products Corporation. Parenteral formulation. 4,605,671, Cl. 514-647.000.
Dialer, Kurt: *See—*
Tiltscher, Helmut; Wolf, Helmut; Schelchshorn, Joachim; and Dialer, Kurt, 4,605,811, Cl. 585-670.000.

Diamond Shamrock Chemicals Company: *See—*
Briden, Frank C., 4,605,698, Cl. 524-559.000.
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.
Maloney, James E.; and McDonell, James A., 4,605,773, Cl. 564-505.000.

Dick, Clarence R.: *See—*
Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., 4,605,438, Cl. 75-67.00A.

Diehl GmbH & Co.: *See—*
Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, 4,606,058, Cl. 377-39.000.

Dierberger, James A.: *See—*
Gemma, Anthony E.; and Dierberger, James A., 4,605,452, Cl. 148-404.000.

Dierks & Sohne GmbH & Co. KG: *See—*
Ahlert, Dieter, 4,605,172, Cl. 241-33.000.

Diesel Kiki Co., Ltd.: *See—*
Kobayashi, Tadashi; Nozaki, Shinya; and Yamada, Keiichi, 4,604,979, Cl. 123-449.000.
Ohnishi, Masanori, 4,604,977, Cl. 123-365.000.

Difonzo, Alexander J.; and Seshamani, Venkatraman, to Foster Wheeler Energy Corporation. Seal assembly for a vapor generator. 4,604,972, Cl. 122-510.000.

Di Giovanni, John; and Kula, John, to Ethicon, Inc. Surgical instrument for applying fasteners said instrument including force supporting means (case IV). 4,605,004, Cl. 128-334.00R.

DiIanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., to Nuclear Research Corp. Radiation measuring apparatus. 4,605,859, Cl. 250-374.000.

DiMarchi, Richard D., to Eli Lilly and Company. Process for inhibiting peptide carbamylation. 4,605,513, Cl. 530-303.000.

Dimpfl, William L., to Chevron Research Company. Apparatus for measuring particle size. 4,605,535, Cl. 422-95.000.

Director General of the Agency of Industrial Science and Technology: *See—*
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, 4,605,727, Cl. 528-191.000.

DiSalvo, Anthony L.; and Tsai, Chung-Chieh, to Stauffer Chemical Company. Modified poly(oxazolidone/urethane) compositions. 4,605,711, Cl. 525-438.000.

Distin, Robert G., Jr., to Advanced Energy Concepts '81 Ltd. Epicyclic transmission having cam driven roller retainer. 4,604,916, Cl. 74-805.000.

Djabbarah, Nizar F., to Mobil Oil Corporation. Oil recovery method employing carbon dioxide flooding with improved sweep efficiency. 4,605,066, Cl. 166-273.000.

Doane, William M.: *See—*
Fanta, George F.; and Doane, William M., 4,605,640, Cl. 502-402.000.

Dobson Park Industries Plc.: *See—*
Allen, Archelaius D., 4,605,341, Cl. 405-297.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Gossner, Matthias, 4,605,320, Cl. 384-494.000.

Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., to Olin Corporation. Rapidly dissolving granular hydrated calcium hypochlorite. 4,605,508, Cl. 252-95.000.

Doi, Masashi: *See—*
Yamaguchi, Yoshiharu; and Doi, Masashi, 4,604,774, Cl. 24-389.000.

Doiron, Gerald J., to Omark Industries, Inc. Safety chain for chain saws. 4,604,932, Cl. 83-830.000.

Dolan, Courtney F., to Chrysler Corporation. Transfer case planetary with power take-off. 4,604,908, Cl. 74-15.880.

Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., to Pitney Bowes Inc. Postal meter thermal printer control. 4,605,937, Cl. 346-76.0PH.

Dolle , Jacques. Apparatus for the preparation of skewers of meat, vegetables, or the like products. 4,604,771, Cl. 17-45.000.

Dolling, Ulf H., to Merck & Co., Inc. Process using achiral co-catalyst promoter for chiral phase transfer alkylation process for an enantiomer of a substituted fluorenyloxyacetic acid. 4,605,761, Cl. 562-461.000.

Dorn, Franz, to Hoffmann-La Roche Inc. Pyridine and pyrazine oxime compounds as fungicides. 4,605,656, Cl. 514-255.000.

Dornbusch, Arthur H.: *See—*
Crowley, Michael J.; Dornbusch, Arthur H.; and Green, Paul J., 4,605,330, Cl. 401-68.000.

Dow Chemical Company, The: *See—*
Au, Andrew T., 4,605,737, Cl. 544-215.000.
Bergman, Roger W., 4,605,519, Cl. 558-234.000.
Darby, Nicholas; and Dunmore, Gordon C., 4,605,772, Cl. 564-503.000.
Dewald, Lamar R., 4,605,473, Cl. 204-1.00T.
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., 4,605,801, Cl. 570-253.000.
Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., 4,605,438, Cl. 75-67.00A.
Lund, Gary K., 4,605,715, Cl. 526-143.000.
Park, Chung P., 4,605,682, Cl. 521-81.000.
Pearson, Norman R.; and Kleschick, William A., 4,605,433, Cl. 71-93.000.
Silvis, H. Craig; and Morgan, Ted A., 4,605,789, Cl. 568-721.000.

Dowbenko, Rostyslaw: *See—*
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.

Downs, John, to Lucas Industries public limited company. Cam follower shoe. 4,604,784, Cl. 29-415.000.

Dowty Meco Limited: *See—*
Biddle, Ronald A., 4,605,122, Cl. 198-834.000.

Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, to Mitsubishi Gas Chemical Company, Inc. Electrodialytic recovery of α-amino acid from its amide. 4,605,477, Cl. 204-182.600.

Dozsa, Gyorgy: *See—*
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Drackett Company, The: *See—*
Burkhart, Richard P.; and Gemperle, Edward C., 4,604,767, Cl. 15-119.00A.

Dragoo, Robert E., to Applied Dynamic Research, Inc. Guard time elimination in a time-division multiplexed, active star-coupled, half-duplex mode, synchronous communications network. 4,606,023, Cl. 370-94.000.

Drake, Charles A., to Phillips Petroleum Company. Hydrogenation catalysts and selective hydrogenation therewith. 4,605,797, Cl. 570-101.000.

Drury, Philip J.: *See—*
Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., 4,605,407, Cl. 623-2.000.

D'Silva, Themistocles D.: *See—*
Rao, Chennupati K.; and D'Silva, Themistocles D., 4,605,667, Cl. 514-477.000.

Duchess Industries, Inc.: *See—*
Sellier, Quentin, 4,605,312, Cl. 368-282.000.

Dudarchik, Anatoly I.: *See—*
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Duesberg, Joseph D.; and Mills, Raymond C., Sr., to United States of America, Administrator, National Aeronautics and Space Administration. Method of repairing hidden leaks in tubes. 4,605,155, Cl. 228-119.000.

Duffy, Geoffrey G., to Fibre Dynamics Limited. Hydraulic transportation of objects. 4,605,329, Cl. 406-49.000.

Dufieux: *See—*
Genans, Michel, 4,605,115, Cl. 198-341.000.

DuFries, Ronald W.: *See—*
Schaetzke, William R.; and DuFries, Ronald W., 4,604,883, Cl. 72-280.000.

Duich, Michael B.: *See—*
Verrando, Marcel G.; Duich, Michael B.; and Overton, Bradley T., 4,605,425, Cl. 55-20.000.

Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, to Rhone-Poulenc Specialites Chimiques. Continuous hydrogenation of lithium into lithium hydride. 4,605,547, Cl. 423-646.000.

Dunham, Philip B.; and Weissmann, Gerald, to New York University; Syracuse University; and Marine Biological Laboratory. Method for measuring anti-inflammatory properties of a composition. 4,605,618, Cl. 435-29.000.

Dunmore, Gordon C.: *See—*
Darby, Nicholas; and Dunmore, Gordon C., 4,605,772, Cl. 564-503.000.

Dupke, Conrad E. Filter wrench. 4,604,920, Cl. 81-64.000.

Duplo Manufacturing Corp.: *See—*
Onishi, Tetsuo; and Sugiyama, Yoshihide, 4,605,926, Cl. 340-825.300.

Duplo Seiko Corp.: *See—*
Onishi, Tetsuo; and Sugiyama, Yoshihide, 4,605,926, Cl. 340-825.300.

Du Pont de Nemours, E. I., and Company: *See—*
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kirkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.
Adams, John B., Jr., 4,605,432, Cl. 71-92.000.
Brake, Loren D., 4,605,788, Cl. 568-698.000.
Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., 4,605,800, Cl. 570-228.000.
Fry, Grant C., 4,605,596, Cl. 428-423.300.
Hasircoglu, Alexander W., 4,605,276, Cl. 339-176.0MF.
Heitner, Barry J., 4,605,717, Cl. 526-228.000.
Hertler, Walter R., 4,605,716, Cl. 526-190.000.
Lee, Ross A., 4,605,753, Cl. 556-111.000.
Petitjean, Gilles, 4,605,146, Cl. 226-97.000.
Takeshita, Tsuneichi, 4,605,705, Cl. 525-330.900.
Wojtkowski, Paul W., 4,605,790, Cl. 568-750.000.

Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., to Societe d'Electronique de la Region Pays de Loire. Optically readable card carrying digital data, and an access control system using said card. 4,605,846, Cl. 235-468.000.

Durham, Randy E. Combination automatic and manual vise apparatus. 4,605,208, Cl. 269-32.000.

Duyvesteyn, Willem P. C., to Amax Inc. Recycling of steel plant dusts to steel furnaces. 4,605,435, Cl. 75-0.50R.

Dyer, Paul N.; and Pierantozzi, Ronald, to Air Products and Chemicals, Inc. Methods for making a supported iron-copper catalyst. 4,605,639, Cl. 502-331.000.

Dynamit Nobel AG: *See—*
Feld, Marcel 4,605,757, Cl. 562-416.000.

Dysan Corporation: *See—*
James, Richard N., 4,605,125, Cl. 206-312.000.
E.G.O. Elektro-Gerate Blanc und Fischer: *See—*
Fischer, Karl; Schreder, Felix; and Kicherer, Robert, 4,605,841, Cl. 219-449.000.
East, John; and Maxwell, Ian, to Metal Box Public Limited Company. Continuous extrusion of metals. 4,604,880, Cl. 72-9.000.
Eastman, David W.; and Walker, Leigh E., to Occidental Chemical Corporation. Graft polymers of polymerizable monomers and olefin polymers. 4,605,704, Cl. 525-193.000.
Eastman Kodak Company: *See—*
Cok, David R., 4,605,956, Cl. 358-44.000.
Eubanks, Robert J. I.; and Pacifici, James G., 4,605,521, Cl. 558-313.000.
Eubanks, Robert J. I.; and Pacifici, James G., 4,605,784, Cl. 568-614.000.
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., 4,605,697, Cl. 534-648.000.
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, 4,605,721, Cl. 527-312.000.
Kiefer, Judy E.; Phillips, William V.; and Woodruff, Thomas E., 4,605,763, Cl. 562-487.000.
Russel, Matthew J.; and Borruso, Rose M., 4,605,298, Cl. 355-3.0TR.
Eastmond, Bruce C., to Motorola, Inc. Automatic gain control responsive to coherent and incoherent signals. 4,606,075, Cl. 455-234.000.
Ebeling, Peter: *See—*
Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, 4,605,192, Cl. 248-394.000.
Eberlein, Klaus: *See—*
Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, 4,605,824, Cl. 179-18.0HB.
Ebisawa, Kaoru: *See—*
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.
Ebmeyer, Wilfried: *See—*
Achelpohl, Fritz; Mundus, Friedhelm; and Ebmeyer, Wilfried, 4,605,392, Cl. 493-196.000.
Echte, Adolf: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.
Economy Industrial Corporation: *See—*
Allen, Thomas R., Jr., 4,605,055, Cl. 164-479.000.
Eddens, Fletcher C., to General Electric Company. Method of making fuel channel. 4,604,785, Cl. 29-463.000.
Eddy, Elizabeth L.: *See—*
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.
Eden, James G.; McCown, Andrew W.; and Geohegan, David B., to Board of Trustees, University of Illinois. Enhanced laser power output. 4,606,034, Cl. 372-57.000.
Eder Instrument Company, Inc.: *See—*
Welber, Stanley; and Lakatos, Nick, 4,605,280, Cl. 350-96.200.
Edman, David C., to Build-A-Sign, Inc. Modular sign. 4,604,820, Cl. 40-605.000.
Edmonds, Harvey A. Size reduction machine. 4,605,173, Cl. 241-36.000.
Edstrom, Kjell E. E.: *See—*
Nilsson, Goran A.; Edstrom, Kjell E. E.; and Wiklund, Henry W., 4,605,073, Cl. 173-51.000.
Edwards, Laroy H., to Chevron Research Company. 4-quinazalone fungicides. 4,605,657, Cl. 514-259.000.
Edwards, William H. Filled calender roll and method of building same. 4,604,778, Cl. 29-123.000.
Ehrhardt, Claus-Dieter: *See—*
Dehns, Jurgen; and Ehrhardt, Claus-Dieter, 4,605,131, Cl. 211-90.000.
Eisenzimmer, George W., to Goodyear Tire & Rubber Company, The. Hose coupling method. 4,605,466, Cl. 156-293.000.
Ekstrom, Leif E. J. Anchorage device. 4,604,846, Cl. 52-704.000.
Elastometal Limited: *See—*
Fyfe, Edward R.; and Slater, William M., 4,605,106, Cl. 188-374.000.
Electrochemische Energieconversie N.V.: *See—*
Alfenaar, Marinus, 4,605,601, Cl. 429-13.000.
Eli Lilly and Company: *See—*
DiMarchi, Richard D., 4,605,513, Cl. 530-303.000.
Hirsch, Kenneth S.; and Pioch, Richard P., 4,605,661, Cl. 514-400.000.
Elliott, David J., to Phillips Petroleum Company. Synthesis of higher ketones. 4,605,775, Cl. 568-387.000.
Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., to PPG Industries, Inc. Carriage train precision linear positioning system. 4,604,934, Cl. 83-880.000.
Ellis, Darwin L.: *See—*
Albrecht, Leman P.; and Ellis, Darwin L., 4,604,853, Cl. 53-487.000.
Ellis, Donald G.: *See—*
Moulding, Thomas S., Jr.; and Ellis, Donald G., 4,604,847, Cl. 53-75.000.
Elmer, Thomas H., to Corning Glass Works. Glass for tungsten-halogen lamps. 4,605,632, Cl. 501-54.000.
Emi Limited: *See—*
Watson, Jeremy D. M., 4,605,985, Cl. 361-283.000.
Emrich, Reinhard; and Appel, Kurt, to Pfaff Industriemaschinen GmbH. Method and apparatus for connecting together material plies which are unilaterally thermoplastically coated. 4,605,578, Cl. 428-57.000.
Endress u. Hauser GmbH u. Co.: *See—*
Massen, Robert, 4,604,904, Cl. 73-861.060.
Energy Conversion Devices, Inc.: *See—*
Nath, Prem, 4,605,565, Cl. 427-39.000.
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,605,941, Cl. 357-2.000.
Engelhard Corporation: *See—*
Feigenbaum, Haim; Pudick, Sheldon; and Wang, Chiu L., 4,605,602, Cl. 429-26.000.
Engelhardt, Gunther; and Lohrmann, Gerhard, to Mannesmann AG. Sheet separating structure. 4,605,145, Cl. 226-74.000.
Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., to Du Pont de Nemours, E. I., and Company. Process for the manufacture of chloroprene. 4,605,800, Cl. 570-228.000.
Ensco, Inc.: *See—*
Marshall, Allen T., 4,605,923, Cl. 340-604.000.
Environmental Research & Technology, Inc.: *See—*
Kebabian, Paul L., 4,605,313, Cl. 374-121.000.
Enzo, Fava. Tap for the delivery of liquids for the conversion from automatic to manual. 4,604,764, Cl. 4-623.000.
Erickson, Donald C. Cryogenic triple-pressure air separation with LP-to-MP latent-heat-exchange. 4,605,427, Cl. 62-22.000.
Ernst, Valentin, to Bodenseewerk Geratetechnic GmbH. Device for recognizing far-away electro-magnetically radiating objects. 4,606,067, Cl. 382-42.000.
Erwin Sick GmbH Optik-Elektronik: *See—*
Anselment, Christoph; and Sackmann, Karl H., 4,605,850, Cl. 250-221.000.
Esau, Edward W.; and Ratzlaff, Howard J., to Hesston Corporation. Plunger cleanout apparatus for underfed crop baler. 4,604,858, Cl. 56-341.000.
Escarabajal, Ghislain: *See—*
Carre, Jean-Jacques; and Escarabajal, Ghislain, 4,605,103, Cl. 188-71.500.
Esch, Frederick S.: *See—*
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.
Esposito, Augustine G.: *See—*
Klievoneit, Harold R.; and Esposito, Augustine G., 4,605,249, Cl. 285-98.000.
Esposito, John M. Tomb module. 4,604,839, Cl. 52-124.200.
Eszakmagyarorszagi Vegyimuvek: *See—*
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.
Ethicon, Inc.: *See—*
Di Giovanni, John; and Kula, John, 4,605,004, Cl. 128-334.00R.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,605,730, Cl. 528-357.000.
Ethridge, Fredrick A.: *See—*
Roth, Douglas D.; and Ethridge, Fredrick A., 4,605,364, Cl. 425-72.00S.
Ethyl Corporation: *See—*
Adams, J. Robert, Jr.; Mitrano, James R.; and Juneau, Matthew K., 4,605,539, Cl. 423-300.000.
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., 4,605,123, Cl. 206-0.500.
Hargis, Duane C., 4,605,766, Cl. 564-409.000.
Eubanks, Robert J. I.; and Pacifici, James G., to Eastman Kodak Company. Process for the preparation of organic nitriles from organic carboxylic acid primary amides. 4,605,521, Cl. 558-313.000.
Eubanks, Robert J. I.; and Pacifici, James G., to Eastman Kodak Company. Process for the preparation of ether-containing chlorides. 4,605,784, Cl. 568-614.000.
Eumurian, Gregoire; and Levan, Jean-Pol, to Thomson CSF. Magnetic field sensor using a coaxial line wound into a coil. 4,605,899, Cl. 324-258.000.
Europeenne de Retraitement de Catalyseurs: *See—*
Berrebi, Georges, 4,605,371, Cl. 432-134.000.
Evans, Lyn T.: *See—*
Ryder, Geoffrey A., 4,605,135, Cl. 215-220.000.
Evans, Robert: *See—*
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, 4,604,964, Cl. 118-50.000.
Evans, Thomas L.; and Williams, David A., to General Electric Company. Method for preparing linear polycarbonate from cyclic oligomer with aryl carbanion generating catalyst. 4,605,731, Cl. 528-371.000.
Evans, Trevor G.: *See—*
Ryder, Geoffrey A., 4,605,135, Cl. 215-220.000.
Everett, Charles J., to Robertshaw Controls Company. Method of making a control device. 4,604,793, Cl. 29-622.000.
Everett, Seth L., Jr., to United States of America, Army. Dot matrix color printer. 4,605,326, Cl. 400-201.000.
EWAB Ejvin Wahren AB: *See—*
Wahren, Mats E., 4,605,121, Cl. 198-803.010.
Exxon Production Research Co.: *See—*
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.
Winbow, Graham A.; and Chen, Sen-Tsuen, 4,606,014, Cl. 367-75.000.

Exxon Research and Engineering Co.: *See*—
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., 4,605,490, Cl. 208-143.000.
Cerkanowicz, Anthony E., 4,605,485, Cl. 204-302.000.
Rhodes, Richard P.; and Halbert, Thomas R., 4,605,752, Cl. 556-42.000.
Ryan, Daniel F., 4,605,486, Cl. 208-412.000.

Ezer, Elemer: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

F. F. Seeley Nominees Pty Ltd.: *See*—
Seeley, Frederic F., 4,604,874, Cl. 62-298.000.

F.I.P. Formatura Iniezione Polimeri, S.p.A.: *See*—
Bonissone, Giancarlo; and Mulas, Piero, 4,605,199, Cl. 251-171.000.

F. L. Smidth & Co. A/S: *See*—
Hundebol, Soren, 4,605,370, Cl. 432-14.000.

F. lli Cucchi S.r.l.: *See*—
Cucchi, Giovanni; and Cucchi, Pietro, 4,604,924, Cl. 82-27.000.

Faccioli, Giovanni: *See*—
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.

Faith, Thomas J., Jr., to RCA Corporation. In-situ cleaned ohmic contacts. 4,605,479, Cl. 204-192.00D.

Faiveley Entreprises: *See*—
Monot, Bernard, 4,605,108, Cl. 192-0.02R.

Falaas, Dennis O.: *See*—
Paquette, Susan Z.; and Falaas, Dennis O., 4,605,592, Cl. 428-334.000.

Falk, Robert A.: *See*—
Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., 4,605,712, Cl. 525-474.000.

Fanta, George F.; and Doane, William M., to United States of America, Agriculture. Oil-absorbent cellulosic derivatives. 4,605,640, Cl. 502-402.000.

Farmaco Italiano Padil S.r.l.: *See*—
Bernardi, Roberto, 4,605,646, Cl. 514-53.000.

Farrens, Eldon F.; and Tillery, Arthur M., to Tillery, Arthur M.; and Tillery, Elinor E. Stapling machine. 4,605,149, Cl. 227-7.000.

Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kiselev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza. Anterior-chamber intraocular prosthetic lens. 4,605,411, Cl. 623-6.000.

Feigenbaum, Haim; Pudick, Sheldon; and Wang, Chiu L., to Engelhard Corporation. Corrosion protected, multi-layer fuel cell interface. 4,605,602, Cl. 429-26.000.

Fekete, Gyorgy: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.

Feld, Marcel, to Dynamit Nobel AG. Method of preparing halogen benzoic acids from toluenes halogenated in the nucleus. 4,605,757, Cl. 562-416.000.

Felter, Richard E.; and Markley, Dean A., to Armstrong World Industries, Inc. Epoxy-phosphate ceramic compositions and methods of preparation. 4,605,570, Cl. 427-386.000.

Fema Corporation: *See*—
Casey, Gerald F.; and Schultz, Richard A., 4,605,197, Cl. 251-30.010.

Fender Musical Instruments Corporation: *See*—
Page, John F.; and Schaller, Helmut, 4,604,936, Cl. 84-313.000.

Feniou, Claude: *See*—
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.

Ferag AG: *See*—
Reist, Walter, 4,604,851, Cl. 53-430.000.

Fergason, James L., to Manchester R & D Partnership. Encapsulated liquid crystal and method. 4,605,284, Cl. 350-334.000.

Ferguson, Arthur R., to Outboard Marine Corporation. Trim and tilt control for marine propulsion devices. 4,605,375, Cl. 440-1.000.

Fernz, James A., to Boeing Company, The. Vibration isolation device used with a jet engine thrust reverser unit. 4,605,186, Cl. 244-110.00B.

Ferrante, Ronald A., to NCR Corporation. Gaussian laser beam filter. 4,605,606, Cl. 430-2.000.

Ferrari, Leonard A., to University of California, The Regents of the. Acoustical imaging system. 4,605,008, Cl. 128-660.000.

Fibre Dynamics Limited: *See*—
Duffy, Geoffrey G., 4,605,329, Cl. 406-49.000.

Fiedler, Robert A., to Beckman Industrial Corporation. Static control strap. 4,605,984, Cl. 361-220.000.

Fils et Cables D'Acier de Lens (Fical): *See*—
Thomas, Bruno; and Viart, Guy, 4,605,598, Cl. 428-659.000.

Filson, John J.: *See*—
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.

Finan, Douglas F.: *See*—
Cohen, Thomas S.; and Finan, Douglas F., 4,605,269, Cl. 339-17.0LC.

Fine, Francois: *See*—
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.

Finlay, John R. Door lock. 4,605,251, Cl. 292-288.000.

Finnan, Jeffrey L.: *See*—
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,605,666, Cl. 514-474.000.

Fischer, Alan B.: *See*—
Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, 4,605,849, Cl. 250-216.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Longitudinal folding apparatus for traveling webs, particularly paper webs received from a rotary printing machine. 4,605,209, Cl. 270-40.000.

Fischer, Karl; Schreder, Felix; and Kicherer, Robert, to E.G.O. Elektro-Gerate Blanc und Fischer. Thermostat for electric hotplate. 4,605,841, Cl. 219-449.000.

Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, to Bayer Aktiengesellschaft. Adhesives with a high level of adhesion on plastics materials. 4,605,703, Cl. 525-157.000.

Fisher, Alan R., to Ford Motor Company. Automatic power transmission mechanism with a pressurized brake band anchor. 4,604,914, Cl. 74-688.000.

Fisher, Alfred J., III; and Schmidt, Timothy J., to General Safety Corporation. Seat belt retractor assembly. 4,605,180, Cl. 242-107.40A.

Fisher, Don E.; Fuqua, John W.; and Wilkie, Arnold E., to Monsanto Company. Pigtail guide for staple spinning. 4,604,863, Cl. 57-352.000.

Fistner, David C., Sr.: *See*—
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.

Fitzwater, Dennis L.: *See*—
Tseo, Gus G.; and Fitzwater, Dennis L., 4,605,396, Cl. 604-32.000.

Flakus, Werner, to Huls Aktiengesellschaft. Shelf-stable, isocyanate (NCO) free urethane urea acrylate resins. 4,605,723, Cl. 528-49.000.

Flanigen, Edith M.: *See*—
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,605,492, Cl. 208-310.00Z.

Fleischauer, K. E. Prosthetic joint. 4,605,417, Cl. 623-49.000.

Fleischer, Joachim; and Fleischer, Willy, to Willy Fleischer Metallwarenfabrik GmbH & Co. Height-adjustable table for work places with video screen. 4,604,955, Cl. 108-147.000.

Fleischer, Willy: *See*—
Fleischer, Joachim; and Fleischer, Willy, 4,604,955, Cl. 108-147.000.

Fleury, Gerard: *See*—
Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, 4,605,009, Cl. 128-660.000.

Fling, Russell T.: *See*—
Christopher, Todd J.; and Fling, Russell T., 4,605,962, Cl. 358-140.000.

Flynn, Peter J., to Bird Machine Company, Inc. Hydrocyclone separator apparatus. 4,605,495, Cl. 209-211.000.

FMC Corporation: *See*—
Plummer, Ernest L., 4,605,748, Cl. 549-43.000.

Foker, John E., to University of Minnesota, Regents of the. Method for stimulating recovery from ischemia employing ribose and adenine. 4,605,644, Cl. 514-45.000.

Folop, Ferenc: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Ford Aerospace & Communications Corp.: *See*—
Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., 4,604,954, Cl. 102-434.000.

Ford, Michael E.; and Johnson, Thomas A., to Air Products and Chemicals, Inc. Noncyclic polyalkylene polyamines by the reaction of an alkanolamine compound and an alkyleneamine compound in the presence of a Group IIA or Group IIIB metal acid phosphate catalyst. 4,605,770, Cl. 564-479.000.

Ford Motor Company: *See*—
Chattha, Mohinder S.; and Cassatta, Joseph C., 4,605,720, Cl. 524-504.000.
Fisher, Alan R., 4,604,914, Cl. 74-688.000.

Forster, Fred D., Jr.: *See*—
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Foster Wheeler Energy Corporation: *See*—
Difonzo, Alexander J.; and Seshamani, Venkatraman, 4,604,972, Cl. 122-510.000.

Foulletier, Louis: *See*—
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.

Fox, Paul L., to Pyramid Optical, Inc. Line lens and method of design therefor. 4,605,282, Cl. 350-167.000.

Foxboro Company, The: *See*—
Sgourakes, George E.; Angelosanto, John P.; and Malloy, Barry T., 4,604,891, Cl. 73-4.00R.

Frahme, Carl E., to Industrial Insulations, Inc. Heat insulating module for a high temperature chamber. 4,605,583, Cl. 428-126.000.

Fraley, Gary L.: *See*—
Crum, Wesley W.; and Fraley, Gary L., 4,605,099, Cl. 182-155.000.

Framatome & CIE: *See*—
Marini, Jean; and Audenard, Bernard, 4,605,924, Cl. 340-683.000.

Frank, Herbert: *See*—
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Frantz, Armand: *See—*
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.

Frayberg, Naum: *See—*
Kulgevich, Alexander, 4,604,985, Cl. 124-56.000.

Frederiksen, Jeffrey E. Video transmission system using time-warp scrambling. 4,605,961, Cl. 358-119.000.

Freeport Minerals Company: *See—*
Touro, Freddie J., 4,605,537, Cl. 423-29.000.

Freermann, Johannes, to Carl Schmale GmbH & Co. KG. Method of and apparatus for automatically orienting a fabric with aligned nap zone and napless zone. 4,604,926, Cl. 83-18.000.

Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, to Robert Bosch GmbH. Apparatus for injecting fuel into a secondary flow of combustion air from a combustion chamber. 4,604,975, Cl. 123-145.00A.

Fricke, Hans D., to Orgo-Thermit Inc. Art of mold welding. 4,605,053, Cl. 164-54.000.

Fridman, Robert, to Pace, Incorporated. Device for attaching modular electronic components to or removing them from an insulative substrate. 4,605,152, Cl. 228-6.200.

Friedberger, Michael P.: *See—*
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.

Friend, Lawrence O.: *See—*
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.

Fringeli, Werner, to Ciba-Geigy Corporation. Stable stilbene fluorescent brightener solution. 4,605,511, Cl. 252-301.210.

Frito-Lay, Inc.: *See—*
Wisdom, Lawrence W., 4,604,925, Cl. 83-13.000.

Fritschi, Edgar, to Warner-Lambert Company. Calcium-antagonist compositions intended for inhalation and process for their manufacture. 4,605,552, Cl. 424-45.000.

Fritschi, Edgar: *See—*
Satzinger, Gerhard; Fritschi, Edgar; and Herrmann, Manfred, 4,605,673, Cl. 514-654.000.

Fritzsche Dodge & Olcott Inc.: *See—*
Willis, Brian J.; and Zazula, Teodosij, 4,605,778, Cl. 568-433.000.

Fry, Grant C., to Du Pont de Nemours, E. I., and Company. Additive for coating compositions. 4,605,596, Cl. 428-423.300.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Takano, Toshio, 4,605,112, Cl. 192-0.033.

Fuji Photo Film Co., Ltd.: *See—*
Asao, Yasuzi; and Takayanagi, Takashi, 4,605,612, Cl. 430-538.000.
Hatanaka, Isamu, 4,605,972, Cl. 358-302.000.
Kuribayashi, Michio, 4,605,951, Cl. 358-11.000.
Nakamura, Takashi; and Takahashi, Kenji, 4,605,861, Cl. 250-484.100.
Ogawa, Hiroshi; and Tamai, Yasuo, 4,605,597, Cl. 428-522.000.
Ohno, Shigeru; and Kishimoto, Shinzo, 4,605,611, Cl. 430-393.000.

Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, to Kowa Co., Ltd. Benzoyl indolecarboxylates. 4,605,739, Cl. 544-373.000.

Fujikawa, Kazuhiko: *See—*
Moriwaki, Hiroshi; Yamamura, Yukio; and Fujikawa, Kazuhiko, 4,604,993, Cl. 128-24.200.

Fujikura Rubber Ltd.: *See—*
Koizumi, Kenichi, 4,605,095, Cl. 182-48.000.

Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, to Kewpie Kabushiki Kaisha. High speed egg breaking method. 4,605,562, Cl. 426-299.000.

Fujinaga, Yoshikazu: *See—*
Takamura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Fujino, Toshihiro: *See—*
Nishijima, Tamotsu; and Fujino, Toshihiro, 4,604,882, Cl. 72-71.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Fujita, Michio: *See—*
DiIanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.

Fujitsu Limited: *See—*
Koshizuka, Atuo, 4,606,012, Cl. 365-189.000.
Sasaki, Susumu; and Nakamura, Hiroshi, 4,606,048, Cl. 375-39.000.
Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, 4,605,823, Cl. 179-18.0BC.

Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, to Hoffmann-La Roche Inc. Substituted acetophenones and compositions containing them. 4,605,674, Cl. 514-685.000.

Fujiwara, Ryoji; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Electrochromic device. 4,605,285, Cl. 350-357.000.

Fukaya, Chikara: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, to Toyota Jidosha Kabushiki Kaisha. Totally synchronized manual transmission unit for use in a vehicle. 4,605,109, Cl. 192-4.00C.

Fukuda, Tsuguo: *See—*
Terashima, Kazutaka; and Fukuda, Tsuguo, 4,606,037, Cl. 373-6.000.

Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, to Hitachi, Ltd. Apparatus for focusing a charged particle beam onto a specimen. 4,605,860, Cl. 250-397.000.

Fukui, Masayasu: *See—*
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Fukumoto, Ryoichi: *See—*
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,604,829, Cl. 49-352.000.

Fukuo, Hidetoshi: *See—*
Masuda, Yoshiaki; Fukuo, Hidetoshi; and Yamamoto, Masaji, 4,605,441, Cl. 106-21.000.

Fukushima, Hisashi: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Fukushima, Isao: *See—*
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.

Fuqua, John W.: *See—*
Fisher, Don E.; Fuqua, John W.; and Wilkie, Arnold E., 4,604,863, Cl. 57-352.000.

Futami, Toru: *See—*
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.

Fuwa, Toru: *See—*
Miyoshi, Kenichi; Suzuki, Masanori; and Fuwa, Toru, 4,605,735, Cl. 536-27.000.

Fyfe, Edward R.; and Slater, William M., to Elastometal Limited. Displacement control device. 4,605,106, Cl. 188-374.000.

Fylan, Michael S., to General Motors Corporation. Concealed headlamp. 4,605,991, Cl. 362-65.000.

G. Siempelkamp GmbH & Co.: *See—*
Bottger, Friedrich, 4,605,467, Cl. 156-497.000.

Gabriel, Albert L. Swing wing glider. 4,605,183, Cl. 244-46.000.

Gadbois, John F.: *See—*
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.

Gaiser, Robert F., to Allied Corporation. Master cylinder. 4,604,866, Cl. 60-535.000.

Gaiser, Robert F.: *See—*
Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., 4,604,870, Cl. 60-551.000.

Gansert, Willi: *See—*
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Obrecht, Werner, 4,605,896, Cl. 324-158.00F.

Gardner, F. Philip: *See—*
Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.

Gardner, Kevin: *See—*
Grey, Peter J.; and Gardner, Kevin, 4,605,681, Cl. 521-51.000.

Garland Commercial Ranges Limited: *See—*
Tchitdjian, John K., 4,605,038, Cl. 137-399.000.

Garrett, John M., to Westinghouse Brake and Signal Company Limited. Process for making thyristor devices. 4,605,451, Cl. 148-191.000.

Garrett, Keith A.: *See—*
Hartranft, Marc D.; and Garrett, Keith A., 4,605,980, Cl. 361-56.000.

Garwood, William E.: *See—*
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,605,488, Cl. 208-78.000.

Gasilovsky, Kim S.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Gates Rubber Company, The: *See—*
Westhoff, William L., 4,605,389, Cl. 474-153.000.

Gegan, Michael J.: *See—*
Butscher, Frank D.; and Gegan, Michael J., 4,605,932, Cl. 343-700.0MS.

Geis, David G.: *See—*
Blanchard, Robert C.; and Geis, David G., 4,605,323, Cl. 400-124.000.

Geisler, Edda: *See—*
Lange, Hans; Geisler, Edda; and Werner, Wolfgang, 4,605,629, Cl. 436-166.000.

Gelinas, Raymond C., to Honeywell Inc. Apparatus and method for distance determination between a receiving device and a transmitting device utilizing a curl-free magnetic vector potential field. 4,605,897, Cl. 324-207.000.

Gemma, Anthony E.; and Dierberger, James A., to United Technologies Corporation. Single crystal articles having controlled secondary crystallographic orientation. 4,605,452, Cl. 148-404.000.

Gemperle, Edward C.: *See—*
Burkhart, Richard P.; and Gemperle, Edward C., 4,604,767, Cl. 15-119.00A.

Genans, Michel, to Dufieux; and Societe Nationale des Chemins de fer Francais. Device designed to move a section being machined past machining means and in the long direction of the section. 4,605,115, Cl. 198-341.000.

General Dynamics Corporation/Convair Div.: *See*—
Stenger, Donald D.; and Coulahan, John F., 4,605,156, Cl. 228-127.000.
General Electric Company: *See*—
Brunelle, Daniel J.; and Singleton, Daniel A., 4,605,745, Cl. 546-304.000.
Chiu, Norman H.; and Schneider, David A., 4,604,871, Cl. 62-130.000.
Cho, Timothy C.; and Lohrey, Edwin J., 4,605,877, Cl. 313-272.000.
Crawford, Carl R.; and Acharya, Kishore C., 4,606,004, Cl. 364-414.000.
Dakin, James T., 4,605,881, Cl. 313-638.000.
Eddens, Fletcher C., 4,604,785, Cl. 29-463.000.
Evans, Thomas L.; and Williams, David A., 4,605,731, Cl. 528-371.000.
Green, Wayne T., 4,605,969, Cl. 358-213.000.
Hibbs, Louis E., Jr.; and Sogoian, George C., 4,605,343, Cl. 407-119.000.
Losapio, Peter F., 4,605,842, Cl. 235-1.00D.
Mark, Victor, 4,605,726, Cl. 528-190.000.
Naster, Ronald J.; Windyka, John A.; and Wolfe, Allen R., 4,605,912, Cl. 333-164.000.
Rieben, Werner P.; and Willson, Jill M., 4,606,001, Cl. 364-167.000.
Stevens, Robert W.; and Markovitz, Mark, 4,605,581, Cl. 428-96.000.
Sturgeon, Gerald E.; and Derman, Robert I., 4,605,362, Cl. 418-63.000.
Terhune, James H., 4,605,858, Cl. 250-374.000.
Thompson, Robert A., 4,604,834, Cl. 51-165.710.
General Foods Corporation: *See*—
Lang, Kevin W., 4,605,561, Cl. 426-93.000.
General Motors Corporation: *See*—
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, 4,605,216, Cl. 271-18.300.
Fylan, Michael S., 4,605,991, Cl. 362-65.000.
Koors, Mark A., 4,605,140, Cl. 220-233.000.
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.
Thornburgh, William F., 4,605,426, Cl. 55-267.000.
General Safety Corporation: *See*—
Fisher, Alfred J., III; and Schmidt, Timothy J., 4,605,180, Cl. 242-107.40A.
GenRad Semiconductor Test, Inc.: *See*—
Cox, Gerald; and DeHaven, Bill, 4,605,894, Cl. 324-73.00R.
Geohegan, David B.: *See*—
Eden, James G.; McCown, Andrew W.; and Geohegan, David B., 4,606,034, Cl. 372-57.000.
Georgiev, Georgi I.: *See*—
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.
Georgiou, Christos J., to International Business Machines Corporation. Fault-tolerant array of cross-point switching matrices. 4,605,928, Cl. 340-825.940.
Geoscience Ltd: *See*—
Sabin, Cullen M.; and Poppendiek, Heinz F., 4,604,902, Cl. 73-861.040.
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., to Eastman Kodak Company. Substituted sulfonamido compounds, photosensitive elements, film units, and processes for retaining a photographic image with same. 4,605,697, Cl. 534-648.000.
Gerber, Christoph: *See*—
Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, 4,605,194, Cl. 248-559.000.
Gesellschaft fur Biotechnologische Forschung mbH (GBF): *See*—
Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, 4,605,620, Cl. 435-148.000.
GfE Gesellschaft fur Elektrometallurgie mbH: *See*—
Andorfer, Hermann, 4,605,436, Cl. 75-10.650.
Giese, John D., to Mepaco, Inc. Meat press. 4,604,949, Cl. 100-194.000.
Giess, Helmut: *See*—
Trachte, Dietrich; and Giess, Helmut, 4,605,171, Cl. 239-453.000.
Gill, Audrey: *See*—
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., 4,605,447, Cl. 148-1.500.
Gillberg-LaForce, Gunilla E.: *See*—
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, 4,605,573, Cl. 427-424.000.
Gillem, Vernon A. Lightning deterrent. 4,605,814, Cl. 174-2.000.
Gimesi, Antal: *See*—
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.
Giordanengo, Giovanni; and Cavallera, Giorgio, to La Nuova Scolpitrice S.p.A. Multiple carving machine. 4,605,049, Cl. 144-144.00R.
Giovannelli, Antonio: *See*—
Taragna, Luigi; and Giovannelli, Antonio, 4,605,137, Cl. 215-254.000.
Taragna, Luigi; and Giovannelli, Antonio, 4,605,138, Cl. 215-254.000.
Giughese, Michel. Drilling apparatus with wall-covering protection. 4,605,345, Cl. 408-95.000.
GKN Automotive Components Incorporated: *See*—
Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., 4,605,384, Cl. 464-111.000.
Glaser, Dieter, to PEG Perego Pines Deutschland GmbH. Folding pushchair. 4,605,243, Cl. 280-642.000.
Glass, Kathleen K.; and Haas, Lawrence J., to AT&T Bell Laboratories. Hierarchical diagnostic testing arrangement for a data processing system having operationally interdependent circuit boards. 4,606,024, Cl. 371-16.000.
Globe International Inc.: *See*—
Lane, Peter, 4,605,586, Cl. 428-240.000.
Globe Manufacturing Company: *See*—
Bowman, J. Robert; and Pinkham, Eleanor T., 4,604,759, Cl. 2-81.000.
Goddard, Errol D.; and Leung, Pak S., to Union Carbide Corporation. Oil-in-alcohol microemulsion. 4,605,422, Cl. 44-51.000.
Godrej, Nadir B.; and Thakur, Manmohan S., to Godrej Soaps Private Limited. Plant growth promoter from rice bran and processes for making and using. 4,605,430, Cl. 71-23.000.
Godrej Soaps Private Limited: *See*—
Godrej, Nadir B.; and Thakur, Manmohan S., 4,605,430, Cl. 71-23.000.
Goedken, James H.; and Waltke, David L., to Hoover Universal, Inc. Pallet and tank assembly. 4,605,126, Cl. 206-386.000.
Goel, Anil B., to Ashland Oil, Inc. Novel tetrasubstituted bicyclic amide acetals and process for their manufacture. 4,605,746, Cl. 548-218.000.
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, to Mack Trucks, Inc. Vibration damping clutch and pinion assembly. 4,605,114, Cl. 192-106.200.
Goetz, Werner, to Siemens Aktiengesellschaft. Apparatus for seating a terminal or similar office equipment. 4,605,188, Cl. 248-157.000.
Gohin, Christian; and Leblond, Henri, to Badin Crouzet. Pressure measuring device. 4,604,898, Cl. 73-701.000.
Goi, Kowichi, to Laurel Bank Machine Co., Ltd. Bill feeding apparatus. 4,605,217, Cl. 271-124.000.
Goldbach, Manfred, to Hauni-Werke Korber & Co. KG. Method and apparatus for forming discrete batches of tobacco particles. 4,605,013, Cl. 131-80.000.
Goldberg, Abraham A.; McMann, Renville H.; and Rossi, John P., to CBS Inc. Two channel compatible high definition television broadcast system. 4,605,950, Cl. 358-11.000.
Golden Valley Foods Inc: *See*—
Andreas, David W., 4,604,854, Cl. 53-552.000.
Goldfarb, Adolph E. Transparent self-adhesive bumpers for protecting household or office surfaces or articles inconspicuously. 4,604,768, Cl. 16-86.00A.
Goldhahn, Stephen L., to Campbell Soup Company. Continuous food sterilization system with hydrostatic sealed treatment chamber. 4,604,948, Cl. 99-470.000.
Goldsmith, John W.; and Rullman, Paul B., to J. M. Huber Corporation. Insulating union and method. 4,605,248, Cl. 285-52.000.
Gompf, Thomas E.: *See*—
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., 4,605,697, Cl. 534-648.000.
Goodhart, Milton E., to Hydril Company. Method for forming boreholes. 4,605,076, Cl. 175-61.000.
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., to Ethyl Corporation. Infusion package. 4,605,123, Cl. 206-0.500.
Goodyear Tire & Rubber Company, The: *See*—
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.
Eisenzimmer, George W., 4,605,466, Cl. 156-293.000.
Mowdood, Syed K., 4,605,693, Cl. 524-239.000.
Sloan, Gary W.; and Nelson, Walter H., 4,605,051, Cl. 157-13.000.
Tung, William C. T., 4,605,728, Cl. 528-289.000.
Goolsby, Thomas C.; and Sanford, Dock, to Cannon Rug Company. Pile fabric formed from fabric strips. 4,605,580, Cl. 428-92.000.
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, to Shandon Southern Products Limited. Tissue processing apparatus. 4,604,964, Cl. 118-50.000.
Gorog, Sandor: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.
Gossner, Matthias, to Dr. Ing. Rudolf Hell GmbH. Device for supporting spindles. 4,605,320, Cl. 384-494.000.
Gostomski, Dominic A., Jr.; and Price, Jerry G., to International Business Machines Corporation. Membrane keyboard switch mounting. 4,605,828, Cl. 200-5.00A.
Goto, Sumio: *See*—
Watanabe, Akio; and Goto, Sumio, 4,605,571, Cl. 427-387.000.
Goto, Taiji: *See*—
Shomura, Eiichi; and Goto, Taiji, 4,605,328, Cl. 400-662.000.
Gotoh, Akio: *See*—
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Gottschalk, Gerhard: *See*—
Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, 4,605,620, Cl. 435-148.000.
Gould Instruments, Ltd.: *See*—
Miller, Allen, 4,605,906, Cl. 330-149.000.
Gower, Patrick E.: *See*—
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.;

Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Graham, David R., to Cannondale Corporation. Racing bicycle frameset. 4,605,241, Cl. 280-281.00R.

Graham Magnetics Incorporated: *See*—
Deffeyes, Robert J., 4,605,835, Cl. 219-85.0BM.

Grasberger, Christine L.; and Martin, Eileen M. Safety bib for engaging a pacifier. 4,604,758, Cl. 2-49.00R.

Gray, Richard L.: *See*—
Rosenthal, Bruce D.; and Gray, Richard L., 4,605,907, Cl. 330-257.000.

Grebel, Robert E.; Neunherz, Robert K.; and McGrath, David W., to Wright Line Inc. Adjustment mechanism for work station. 4,604,956, Cl. 108-147.000.

Green Cross Corporation, The: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Green, Michael J., to BP Chemicals Limited. Preparation of alkanolamine. 4,605,769, Cl. 564-477.000.

Green, Paul J.: *See*—
Crowley, Michael J.; Dornbusch, Arthur H.; and Green, Paul J., 4,605,330, Cl. 401-68.000.

Green, Wayne T., to General Electric Company. Video pattern noise processor. 4,605,969, Cl. 358-213.000.

Greene, John P.: *See*—
Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., 4,606,030, Cl. 372-5.000.

Greenfield, Harold: *See*—
Malz, Russell E., Jr.; and Greenfield, Harold, 4,605,743, Cl. 546-186.000.

Greenstein, Lawrence J.: *See*—
Amitay, Noach; and Greenstein, Lawrence J., 4,606,054, Cl. 375-102.000.

Gregory, Reginald: *See*—
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.

Gregory, Stanley O.: *See*—
Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.

Greiner, Waldemar H., to Seal-Air Control Systems Inc. Damper construction. 4,605,198, Cl. 251-58.000.

Grendahl, Dennis T., to Surgidev Corporation. Intraocular lens. 4,605,410, Cl. 623-6.000.

Grenier, Claude A., to Plummer, Walter Allen. Snap-on heat insulating jacket and method for enclosing ducting. 4,605,043, Cl. 138-149.000.

Grey, George E., to Craigave Pty. Ltd. Imitation medal. 4,604,819, Cl. 40-1.500.

Grey, Peter J.; and Gardner, Kevin, to BTR plc. Thermosetting polyurethanes. 4,605,681, Cl. 521-51.000.

Grieben, Karl-Heinz, to Hauni-Werke Korber & Co. KG. Method of tip turning filter cigarettes or the like. 4,605,015, Cl. 131-94.000.

Grigoleit Company, The: *See*—
Howie, Robert K., Jr., 4,604,786, Cl. 29-513.000.

Grobbelaar, Charl J., to Arthroplasty Research & Development (Pty) Ltd. Apparatus for hip arthroplasty. 4,605,416, Cl. 623-23.000

Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, to Bayer Aktiengesellschaft. Process for the in situ production of urea group-containing isocyanates in polyols. 4,605,756, Cl. 560-351.000.

Grosbois, Jean: *See*—
Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, 4,605,547, Cl. 423-646.000.

Grund, Klaus J. Method of and device for repairing slide-valve spindles. 4,605,031, Cl. 137-15.000.

Grunwald, Werner: *See*—
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.

GTE Products Corporation: *See*—
Mizuhara, Howard, 4,604,945, Cl. 92-176.000.
Vanderpool, Clarence D., 4,605,538, Cl. 423-55.000.

Guendling, Fred W., Jr. Method of putting a golf ball. 4,605,228, Cl. 273-77.00R.

Guenther, Kenneth L.: *See*—
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4,604,849, Cl. 53-266.00A.

Guerdon, Constant: *See*—
Ninane, Leon; Breton, Claude; and Guerdon, Constant, 4,605,771, Cl. 564-497.000.

Gueret, Jean-Louis H., to L'Oreal. Make-up powder compact and its applicator brush. 4,605,022, Cl. 132-82.00R.

Guerro, Gerald J.; Proverb, Robert J.; and Tarvin, Robert F., to American Cyanamid Company. Temporary wet strength resin. 4,605,702, Cl. 525-154.000.

Guibault, Denis. Modular floating dock. 4,604,962, Cl. 114-266.000.

Guilbert, Curtis R., to Minnesota Mining and Manufacturing Company. High temperature wire coating powder. 4,605,710, Cl. 525-438.000.

Gullfiber Akustik AB: *See*—
Karlen, Lennart, 4,605,093, Cl. 181-295.000.

Gurol, Ismail M., to John Fluke Mfg. Co., Inc. Method of making molded circuit board. 4,604,799, Cl. 29-897.000.

Gusching, Nagle V.; and Daulton, Richard R., to Monarch Machine Tool Company, The. Post process diameter gage. 4,604,810, Cl. 33-178.00E.

Gutjahr, Lothar, to Klockner-Werke Aktiengesellschaft. Mold closing unit of an injection molding machine. 4,605,367, Cl. 425-150.000.

Guy, Robert R., to Lof Plastics Inc. Tape tension control system. 4,605,457, Cl. 156-160.000.

Gwozdz, Peter S.; and Bath, Hubert M., to Advanced Micro Devices, Inc. Method for interconnecting conducting layers of an integrated circuit device. 4,605,470, Cl. 156-643.000.

Haas, David J.; and Autote, Alexander J., to Temtec Inc. Writing board. 4,605,246, Cl. 282-29.00A.

Haas, Lawrence J.: *See*—
Glass, Kathleen K.; and Haas, Lawrence J., 4,606,024, Cl. 371-16.000.

Haas, Roland: *See*—
Brandenstein, Manfred; and Haas, Roland, 4,605,113, Cl. 192-98.000.
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,605,321, Cl. 384-512.000.

Habitzreiter, Richard K.; Pinney, Robert V. B., Jr.; and Woolston, Mark S., to Recognition Equipment Incorporated. Video compressor for video format unit. 4,606,068, Cl. 382-56.000.

Haddad, James H.; and Owen, Hartley, to Mobil Oil Corporation. FCC catalyst stripping method. 4,605,491, Cl. 208-161.000.

Haendle, Joerg, to Siemens Aktiengesellschaft. Radiodiagnostic system with a flat picture intensifier. 4,606,064, Cl. 378-99.000.

Haga, Nobuhiro: *See*—
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.

Haggan, Douglas E., to AT&T Technologies, Inc. Computerized transaction card with inductive data transfer. 4,605,844, Cl. 235-380.000.

Hahn, James H., to Rush, David H. Electromechanical machine. 4,605,873, Cl. 310-154.000.

Hahn, Norbert; and Olson, Arthur A., Jr., to Rite-Hite Corporation. Vehicle restraint. 4,605,353, Cl. 414-401.000.

Hahn, Steven C.: *See*—
Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., 4,605,384, Cl. 464-111.000.

Haines, Richard F., to United States of America, National Aeronautics and Space Administration. Simulator scene display evaluation device. 4,605,303, Cl. 356-73.000.

Hajdu, Istvan: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Hajj-Chehade, Mohammed, to U.S. Philips Corporation. Phase locked loop frequency demodulator having an adjustable bandwidth. 4,605,904, Cl. 329-50.000.

Hajos, Gyorgy: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Halbert, Thomas R.: *See*—
Rhodes, Richard P.; and Halbert, Thomas R., 4,605,752, Cl. 556-42.000.

Halcon SD Group, Inc., The: *See*—
Pugach, Joseph, 4,605,541, Cl. 423-22.000.

Halford, Wayne R.; and Nakano, Walter S., to Mattel, Inc. Toy vehicle game with launcher and return means. 4,605,230, Cl. 273-129.0AP.

Hallgren, Leif: *See*—
Andersson, Jarl A.; and Hallgren, Leif, 4,605,060, Cl. 165-166.000.

Halliburton Company: *See*—
Smith, Harry D., Jr., 4,605,854, Cl. 250-266.000.

Hallidy, William M.; and Shutt, Donald P., to Western Gear Corporation. Slip clutch with slip detector and electrical disconnect. 4,605,107, Cl. 192-0.02R.

Halocarbon Products Corp.: *See*—
Astrologes, Gary W., 4,605,802, Cl. 570-257.000.

Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., to United States of America, Energy. Boron-carbide-aluminum and boron-carbide-reactive metal cermets. 4,605,440, Cl. 75-238.000.

Hamamatsu Photonics Kabushiki Kaisha: *See*—
Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, 4,605,600, Cl. 428-689.000.

Hamana, Ryozo: *See*—
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.

Hamarman, Henry: *See*—
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.

Hamasaki, Yoshiharu: *See*—
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Hamazoe, Kimihisa: *See*—
Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, 4,605,609, Cl. 430-232.000.

Hambrecht, Juergen: *See*—
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Hamilton, Don A. Breakdown boat paddle with variable configuration. 4,605,378, Cl. 440-102.000.

Hammond, Willis B.: *See*—
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.

Hanayama, Naoki: *See*—
Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, 4,605,940, Cl. 346-209.000.

Hankel, Rainer; Pham, Minh-Chanh; and Peuser, Sieghart, to Robert Bosch GmbH. Contactless relative movement sensor. 4,605,308, Cl. 356-373.000.

Hanning, Bernard W.; and Dent, John N. Label handling apparatus. 4,605,214, Cl. 271-3.100.

Hans, Rudiger: *See*—
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,605,321, Cl. 384-512.000.

Hara, Kenji: *See*—
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.

Hara, Takeshi: *See*—
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Harada, Hiroyuki: *See*—
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Harada, Junzo, to Idemitsu Kosan Company Limited. Process for producing silicon carbide whisker. 4,605,542, Cl. 423-345.000.

Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, to Nitto Boseki Co., Ltd. Small-globular crosslinked monoallylamine polymer and process for producing the same. 4,605,701, Cl. 525-107.000.

Harandi, Mohsen N., to Mobil Oil Corporation. Method for minimizing recycling in an unsaturated gas plant. 4,605,493, Cl. 208-341.000.

Harara, Mitsuhiko: *See*—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Hargis, Duane C., to Ethyl Corporation. Alkylation process. 4,605,766, Cl. 564-409.000.

Harlass, Harald: *See*—
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Harman, R. Keith, to Senstar Security Systems Corp. Shunt transmission line for use in leaky coaxial cable system. 4,605,914, Cl. 333-237.000.

Harner, Robert H.; and Ruta, Joseph W., to S&C Electric Company. Control circuit for a circuit interrupter. 4,605,982, Cl. 361-94.000.

Harrel, Gad J. Reinforced box structure. 4,605,159, Cl. 229-116.000.

Harrington, Timothy A., to Rockwell International Corporation. Hybrid junction signal combiner. 4,605,902, Cl. 328-158.000.

Harris, Gerald R. Compact variable speed pulley assembly. 4,605,386, Cl. 474-8.000.

Harris Graphics Corporation: *See*—
Bastian, Donald G.; and Slepicka, Gregory L., 4,604,931, Cl. 83-665.000.

Harris, Richard T.: *See*—
Harris, Theodore R.; and Harris, Richard T., 4,605,092, Cl. 181-280.000.

Harris, Theodore R.; and Harris, Richard T. Large, high r.p.m. diesel engine exhaust muffler. 4,605,092, Cl. 181-280.000.

Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Elior J.; and Tetenbaum, Marvin T., to PPG Industries, Inc. Resinous blends of epoxy and acrylic resins and the use thereof in electrodeposition. 4,605,476, Cl. 204-181.600.

Hartman, Eric E.: *See*—
Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., 4,605,021, Cl. 132-33.00R.

Hartman, Johan E. A.: *See*—
van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, 4,606,057, Cl. 377-28.000.

Hartmann, Gunter, to Siemens Aktiengesellschaft. Device for drilling holes in a stack of plates. 4,605,344, Cl. 408-95.000.

Hartner, Hartmut: *See*—
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

Hartranft, Marc D.; and Garrett, Keith A., to Zilog, Inc. Integrated circuit high voltage protection. 4,605,980, Cl. 361-56.000.

Harvey Hubbell Incorporated: *See*—
Jorgensen, Robert W.; and Lewis, Thomas E., 4,605,816, Cl. 174-65.00R.

Harvey, Ian J., to Lucas Industries public limited company. Drive circuits. 4,605,983, Cl. 361-154.000.

Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, to Kansai Paint Co., Ltd. Process for producing granular fixed enzymes or microorganisms. 4,605,622, Cl. 435-182.000.

Hasegawa, Sakuro: *See*—
Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, 4,605,701, Cl. 525-107.000.

Hashima, Akio: *See*—
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, 4,605,974, Cl. 360-62.000.

Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 4,605,821, Cl. 179-6.130.

Hashimoto, Kazuo, to Hashimoto Corporation. Automatic telephone answering apparatus. 4,605,821, Cl. 179-6.130.

Hashimoto, Masashi: *See*—
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, to Nippon Kogaku K.K. Color balance adjusting apparatus for color television cameras. 4,605,955, Cl. 358-29.000.

Hashimoto, Yoshikazu: *See*—
Kudoh, Kazunao; and Hashimoto, Yoshikazu, 4,605,533, Cl. 428-622.000.

Hasircoglu, Alexander W., to Du Pont de Nemours, E. I., and Company. Two row coaxial cable connector. 4,605,276, Cl. 339-176.0MF.

Haskel, Inc.: *See*—
Aldred, Derek L., 4,604,918, Cl. 81-57.380.

Hata, Kosei, to Seiken Kai Foundational Juridical Person. Methods for purifying water or water-containing material using microorganisms and living bacterial preparations as well as method for preparing and storing same. 4,605,502, Cl. 210-611.000.

Hata, Masahito: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, to Hitachi, Ltd. Programmable image processor. 4,606,066, Cl. 382-41.000.

Hatanaka, Isamu, to Fuji Photo Film Co., Ltd. Image forming method. 4,605,972, Cl. 358-302.000.

Hatch, Robert A.: *See*—
Owens, Kenneth E.; and Hatch, Robert A., 4,605,594, Cl. 428-373.000.

Hatcher, Clive D.; Hill, Alan; and King, Geoffrey W., to W. R. Grace & Co. Closure lining machine. 4,605,351, Cl. 413-58.000.

Hatsuse, Toshikazu: *See*—
Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, 4,604,833, Cl. 51-165.800.

Hattori, Eizou: *See*—
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Hauk, Rolf: *See*—
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Hauni-Werke Korber & Co. KG: *See*—
Goldbach, Manfred, 4,605,013, Cl. 131-80.000.
Grieben, Karl-Heinz, 4,605,015, Cl. 131-94.000.
Wahle, Gunter, 4,605,014, Cl. 131-94.000.

Hawkins, James M.: *See*—
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, 4,605,721, Cl. 527-312.000.

Hawkins, Jeffrey A., to Tektronix, Inc. Method and apparatus for calibrating an optical document digitizer. 4,605,970, Cl. 358-265.000.

Haworth, Inc.: *See*—
McKernan, Thomas J.; and Berry, Gordon C., 4,605,266, Cl. 312-219.000.

Hayashi, Kanji: *See*—
Yonehara, Takashi; and Hayashi, Kanji, 4,605,574, Cl. 427-424.000.

Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, to Honda Giken Kogyo Kabushiki Kaisha. Air vent device for fuel tank on vehicle. 4,605,032, Cl. 137-44.000.

Hayashi, Toshihide, to Sony Corporation. Direct broadcasting satellite receiver. 4,605,968, Cl. 358-188.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Evaporative cooled engine having manual control for service facilitation. 4,604,973, Cl. 123-41.210.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Passenger room heating system for use with boiling liquid engine cooling system. 4,605,163, Cl. 237-2.00A.

Hayashi, Yoshimasa; and Ogawa, Naoki, to Nissan Motor Co., Ltd. Cabin heating arrangement for vehicle having evaporative cooled engine. 4,605,164, Cl. 237-2.00A.

Hayata, Yoshiki: *See*—
Toudo, Kenzi; Hayanaka, Motoshi; and Hayata, Yoshiki, 4,605,863, Cl. 307-269.000.

Haynes, Hendrick W.; and Mayer, Harry W., to Mayer, Harry W. Constant mesh gear transmission. 4,605,084, Cl. 180-70.100.

Haynes, Paul L., Jr.: *See*—
Sundberg, Jack G.; and Haynes, Paul L., Jr., 4,605,235, Cl. 277-87.000.

Heberlein, Irmtrud: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Hechler, Hatto, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Apparatus for folding traveling webs using a series of roller pairs. 4,605,210, Cl. 270-41.000.

Hechler, Hatto, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Apparatus for continuous handling of folded paper products. 4,605,213, Cl. 270-55.000.

Heine, Christian; and Wust, Reinhold, to Henkel Kommanditgesellschaft auf Aktien. Process for increasing the viscosity of oils. 4,605,563, Cl. 426-607.000.

Heintke, Hans E.: *See*—
Ullmann, Roland; and Heintke, Hans E., 4,604,801, Cl. 30-43.920.

Heitner, Barry J., to Du Pont de Nemours, E. I., and Company. Preparation of acrylic polymer sheets using a ternary peroxide initiator system. 4,605,717, Cl. 526-228.000.

Heitz, Walter; and Koch, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of polyarylene sulphides with functional end groups. 4,605,713, Cl. 525-537.000.
Heitz, Walter; and Koch, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of polyarylene sulphides with functional end groups. 4,605,732, Cl. 528-388.000.
Held, Kurt. Pressurized writing device with needle weight having valve means. 4,605,331, Cl. 401-258.000.
Heller, Jorge: *See—*
Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., 4,605,670, Cl. 514-619.000.
Hellewell, Byron A. Self-aligning fiber optic connector. 4,605,281, Cl. 350-96.210.
Hellmer, Ernest W.; and Pfohl, Frank W., to Continental Plastic Containers. Swivel hose connection and adjustable mounting of support member for cam follower and swivels. 4,605,368, Cl. 425-195.000.
Helmberger, Josef: *See—*
Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, 4,605,954, Cl. 358-27.000.
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., to Standard Oil Company (Indiana). Automatic truck measuring system and process. 4,605,081, Cl. 177-25.000.
Hendrix, Charles R., Jr.: *See—*
de la Guardia, Mario; and Hendrix, Charles R., Jr., 4,605,018, Cl. 132-7.000.
Hendry, James D.: *See—*
Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., 4,604,954, Cl. 102-434.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Heine, Christian; and Wust, Reinhold, 4,605,563, Cl. 426-607.000.
Henny Penny Corporation: *See—*
Koopman, Peter J., 4,605,840, Cl. 219-401.000.
Heraly, Neil H., to Medtronic, Inc. Temporary package for an electrical component. 4,605,007, Cl. 128-419.0PT.
Hercules Incorporated: *See—*
Maslanka, William W., 4,605,709, Cl. 525-430.000.
Walker, John F., 4,605,694, Cl. 524-292.000.
Hering, Gunter: *See—*
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, 4,605,795, Cl. 568-867.000.
Herman, David E.: *See—*
Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., 4,605,494, Cl. 209-166.000.
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.
Herman Miller, Inc.: *See—*
Nienhuis, James H.; and Schreiner, Charles P., 4,605,988, Cl. 361-429.000.
Hermann Berstorff Maschinenbau GmbH: *See—*
Albers, August, 4,605,309, Cl. 366-76.000.
Herr, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., to Armstrong World Industries, Inc. Decorative materials comprising crinkled chips. 4,605,584, Cl. 428-142.000.
Herrick, Robert S. Dispensing device for container having fluid to be controllably dispensed into an eye. 4,605,398, Cl. 604-300.000.
Herriges, Donald W.: *See—*
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, 4,605,216, Cl. 271-18.300.
Herrmann, Manfred: *See—*
Satzinger, Gerhard; Fritschi, Edgar; and Herrmann, Manfred, 4,605,673, Cl. 514-654.000.
Hertler, Walter R., to Du Pont de Nemours, E. I., and Company. Lewis base-catalyzed polymerization. 4,605,716, Cl. 526-190.000.
Hess, Heinrich: *See—*
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,605,756, Cl. 560-351.000.
Hesston Corporation: *See—*
Esau, Edward W.; and Ratzlaff, Howard J., 4,604,858, Cl. 56-341.000.
Heubuch, Remigius: *See—*
Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, 4,605,129, Cl. 206-623.000.
Hewison, George D., to ITW Limited. Adjustable control assemblies. 4,604,921, Cl. 81-429.000.
Heybourn, Frank, to Molins, Limited. Conveying rod-like articles. 4,605,117, Cl. 198-493.000.
Hi-Shear Corporation: *See—*
Olander, Donald E.; and Woods, Harold J., 4,604,953, Cl. 102-272.000.
Hibbs, Louis E., Jr.; and Sogoian, George C., to General Electric Company. Sintered polycrystalline diamond compact construction with integral heat sink. 4,605,343, Cl. 407-119.000.
Hibril, Dalal: *See—*
Tucker, J. Camille, 4,605,403, Cl. 604-385.100.
Higashi, Shinya, to Kabushiki Kaisha Toshiba. Switching control circuit. 4,605,998, Cl. 363-19.000.
Higuchi, Chojiro: *See—*
Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.
Hill, Alan: *See—*
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Hino Jidosha Kogyo Kabushiki Kaisha: *See—*
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.
Hino, Motohiro: *See—*
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Hintz, Warren J.: *See—*
Prussin, Samuel B.; Levine, Ralph; and Hintz, Warren J., 4,605,554, Cl. 424-66.000.
Hirai, Toshimasa: *See—*
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, 4,605,727, Cl. 528-191.000.
Hiramitsu, Tetsushi: *See—*
Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,604,912, Cl. 74-484.00R.
Hirata, Mitsuteru: *See—*
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.
Hirsch, Kenneth S.; and Pioch, Richard P., to Eli Lilly and Company. Aromastase inhibiting α,α-diarylimidazole-4(5)-propionitriles, α,α-diarylimidazole-4(5)-propionamides, and 4(5)-(2,2-diarylethyl-)imidazoles. 4,605,661, Cl. 514-400.000.
Hirzel, Frederic J.; and Levy, Roy J., to Advanced Micro Devices, Inc. Method for detection of line activity for Manchester-encoded signals. 4,606,052, Cl. 375-87.000.
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, to Agency of Industrial Science and Technology. Lateral excitation type gas laser. 4,606,035, Cl. 372-87.000.
Hitachi, Ltd.: *See—*
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.
Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, 4,606,066, Cl. 382-41.000.
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.
Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Machashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.
Toudo, Kenzi; Yiyanaka, Motoshi; and Hayata, Yoshiki, 4,605,863, Cl. 307-269.000.
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, 4,605,356, Cl. 417-102.000.
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.
Yamaguchi, Kenichi, 4,606,015, Cl. 367-95.000.
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Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.
Hitchins, William G. Hinged window-guard assembly. 4,604,827, Cl. 49-57.000.
Ho, Thomas K. Y.: *See—*
Van Den Brekel, Jacques; and Ho, Thomas K. Y., 4,605,153, Cl. 228-56.300.
Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., to Alberto-Culver Company. Self-tensioning hair waving rod. 4,605,021, Cl. 132-33.00R.
Hoechst Aktiengesellschaft: *See—*
Arndt, Otto; and Papenfuhs, Theodor, 4,605,767, Cl. 564-412.000.
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, 4,605,809, Cl. 585-640.000.
Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, 4,605,480, Cl. 204-211.000.
Hoelscher, Charles H.: *See—*
Darlington, William B.; and Hoelscher, Charles H., 4,605,545, Cl. 423-516.000.
Hoesch Aktiengesellschaft: *See—*
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,605,178, Cl. 242-55.000.
Hoffacker, Gerd; and Muller, Willi. Alkaline cyanide bath for electrolytic deposition of copper-tin-alloy coatings. 4,605,474, Cl. 204-44.000.
Hoffman, Glenn A., Jr.: *See—*
Avila, Robert M.; and Hoffman, Glenn A., Jr., 4,604,930, Cl. 83-527.000.
Hoffmann-La Roche Inc.: *See—*
Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, 4,605,641, Cl. 514-12.000.
Dorn, Franz, 4,605,656, Cl. 514-255.000.
Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, 4,605,674, Cl. 514-685.000.
Wei, Chung-Chen; and Weigele, Manfred, 4,605,744, Cl. 546-210.000.
Hoffmann, Reinhold. Imitation gem. 4,604,876, Cl. 63-32.000.
Hoffmeister, Lawrence D.; and Thompson, Richard J., to United States of America, Army. Lightweight composite launcher pod. 4,604,939, Cl. 89-1.816.
Hofmann, Norbert, to Triumph Adler AG. Ribbon cassette with releasable locking mechanism. 4,605,325, Cl. 400-207.000.

Hoftman, Michael: *See*—
Sandei, Dan; and Hoftman, Michael, 4,605,124, Cl. 206-223.000.
Hohn, Roland. Vehicle, especially camping vehicle. 4,605,258, Cl. 296-164.000.
Hokusei Nikkei Household Utensils Co., Ltd.: *See*—
Kita, Toshiyuki, 4,604,989, Cl. 126-369.000.
Holdaway, Steven D.: *See*—
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Holm, Boris, to Nobel Kemi AB. Method of manufacturing o- and p-nitrobenzaldehyde. 4,605,777, Cl. 568-424.000.
Holmblad, Carolann M.: *See*—
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., 4,605,406, Cl. 623-1.000.
Holmes, Dale A., to Rockwell International Corporation. Decentered annular ring resonator with internal misalignment cancellation. 4,606,036, Cl. 372-95.000.
Holy , Antonin; and de Clercq, Erik, to Ceskoslovenska Akademie Ved.; and Stichting Rega VZW. Antivirally active adenine derivatives. 4,605,658, Cl. 514-261.000.
Hombach, Rudoph: *See*—
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.
Honaga, Susumu; and Suzuki, Mikio, to Toyoda Koki Kabushiki Kaisha. Power steering. 4,605,085, Cl. 180-143.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, 4,605,032, Cl. 137-44.000.
Isobe, Yoshinobu; and Iwasaki, Hiroaki, 4,604,984, Cl. 123-589.000.
Otani, Junji; Okubo, Akira; and Iwashita, Kanau, 4,604,865, Cl. 60-293.000.
Honda, Masahiro, to Ube Industries, Ltd. Section conveying and cooling apparatus. 4,604,928, Cl. 83-151.000.
Honda, Naoto: *See*—
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Honeywell Inc.: *See*—
Gelinas, Raymond C., 4,605,897, Cl. 324-207.000.
Lim, Wah L., 4,605,307, Cl. 356-350.000.
Reid, Bruce E., 4,605,830, Cl. 200-73.000.
Hooper, Jack L.; and Radiel, Harold E. Pneumatic jack. 4,605,203, Cl. 254-93.0HP.
Hoover Universal, Inc.: *See*—
Goedken, James H.; and Waltke, David L., 4,605,126, Cl. 206-386.000.
Hoovler, Marcia J.: *See*—
Ligon, Kathy D.; and Hoovler, Marcia J., 4,605,397, Cl. 604-179.000.
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, to Fujisawa Pharmaceutical Co., Ltd. Compound, FR-900447, production and use thereof. 4,605,559, Cl. 424-120.000.
Horiba, Ltd.: *See*—
Yamada, Takeshi, 4,605,855, Cl. 250-343.000.
Horikawa, Takashi: *See*—
Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, 4,605,387, Cl. 474-112.000.
Horikoshi, Yukio: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,605,695, Cl. 524-424.000.
Horino, Hiroshi: *See*—
Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, 4,606,066, Cl. 382-41.000.
Horiuchi, Shigeyuki, to Mattel, Inc. Toy block transformed into a robot. 4,605,383, Cl. 446-376.000.
Horse Health Products, Inc.: *See*—
Sparks, Jimmy L., 4,604,804, Cl. 30-294.000.
Horton, Paul D. Parallel-blade/twist-lock adapter plug. 4,605,273, Cl. 339-75.00P.
Horvath, Lorand: *See*—
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.
Horwath, Robert O.; and Irbe, Robert M., to Nabisco Brands, Inc. Process for preparing fructose from starch. 4,605,619, Cl. 435-94.000.
Hosokawa, Motoyuki: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,605,796, Cl. 568-902.000.
Hosoya Fireworks Co., Ltd.: *See*—
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.
Hounsel, Mack A., to J T Thorpe Company. Suspended seal ring for ladle preheater. 4,605,206, Cl. 266-283.000.
Hovland, Lyle W.; and Klingensmith, James D., to Aluminum Company of America. Dish antennae mounting structure. 4,605,333, Cl. 403-27.000.
Howie, Robert K., Jr., to Grigoleit Company, The. Method of making a composite article including a body having a decorative metal plate attached thereto. 4,604,786, Cl. 29-513.000.
Huang, Francke L. D. Safety cutlery case with sharpening device. 4,604,836, Cl. 51-214.000.
Hubbard, David W.; and Seestrom, Frank E., to Pitney Bowes Inc. Ink jet array. 4,605,939, Cl. 346-140.00R.
Huck Manufacturing Company: *See*—
Sukharevsky, Boris P., 4,604,889, Cl. 72-391.000.
Huff, Norman J.: *See*—
Kulla, James P.; and Huff, Norman J., 4,605,564, Cl. 427-2.000.
Hugenbusch, Hans-Wolfgang: *See*—
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.
Hughes Aircraft Company: *See*—
Pastor, Antonio C., 4,605,468, Cl. 156-608.000.
Hughes Tool Company: *See*—
Abercrombie, Bolling A., 4,605,065, Cl. 166-250.000.
Hull, Scott A.: *See*—
Neary, Ralph E.; and Hull, Scott A., 4,604,879, Cl. 70-224.000.
Huls Aktiengesellschaft: *See*—
Flakus, Werner, 4,605,723, Cl. 528-49.000.
Hundebol, Soren, to F. L. Smidth & Co. A/S. Method and apparatus for burning away organic components in raw phosphate. 4,605,370, Cl. 432-14.000.
Hundstad, Richard L. Infrared radiation responsive target. 4,605,232, Cl. 273-348.100.
Hunter, Robert R., III: *See*—
Weston, Robert E.; and Hunter, Robert R., III, 4,605,399, Cl. 604-305.000.
Huppee, Robert. Faucet valve. 4,605,200, Cl. 251-258.000.
Hurd, Bruce; and Oda, Robert, to Accuswing, Incorporated. Athlete's arm restrainer. 4,605,227, Cl. 273-54.00B.
Hurlburt, Joseph C., to New Holland Inc. Operator's cab for crop harvesting machine. 4,605,259, Cl. 296-190.000.
Hurley, Nancy J.: *See*—
Sias, Ralph M.; Hurley, Nancy J.; and Dalebout, Melvin W., 4,605,582, Cl. 428-120.000.
Huvet, Jean-Marie; and Serrie, Gerard J., to Claude, S.A. Industrial or domestic overvoltage protective device. 4,605,981, Cl. 361-91.000.
Hydril Company: *See*—
Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., 4,605,195, Cl. 251-1.200.
Goodhart, Milton E., 4,605,076, Cl. 175-61.000.
Hydrino AB: *See*—
Zettergren, Ted, 4,605,042, Cl. 137-596.120.
Hydro-Thermal Corp.: *See*—
Felczynski, John F., 4,604,806, Cl. 30-417.000.
Hyltoft, Hans C., to Mercante International A/S. Processing station for an electrophotographic information printer. 4,605,215, Cl. 271-9.000.
Ibe, Hiroshi: *See*—
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.
Ichihashi, Mikio: *See*—
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.
Ichikawa, Ieyasu; and Arai, Shigeji, to Komori Printing Machinery Co., Ltd. Intaglio printing machine. 4,604,951, Cl. 101-153.000.
Ichikawa, Souji, to Mitutoyo Mfg. Co., Ltd. Cable connecting device. 4,605,274, Cl. 339-89.00R.
Ichinose, Hisashi: *See*—
Ushiyama, Keiichi; and Ichinose, Hisashi, 4,605,548, Cl. 424-15.000.
Ichiya, Mitsuo: *See*—
Yamamoto, Tadashi; Ichiya, Mitsuo; and Yamaguchi, Keizo, 4,604,800, Cl. 30-41.000.
Ide Idustries Limited: *See*—
Ogi, Hisao, 4,605,461, Cl. 156-233.000.
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, to NEC Corporation. Coil wire. 4,605,917, Cl. 335-128.000.
Idemitsu Kosan Company Limited: *See*—
Harada, Junzo, 4,605,542, Cl. 423-345.000.
Igarashi, Hideo: *See*—
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.
Ihle, John M., to Motorola, Inc. FSK demodulator with high noise immunity digital phase detector. 4,605,903, Cl. 329-50.000.
Iida, Fumio, to Canon Kabushiki Kaisha. Pressure sensitive transferring member. 4,605,593, Cl. 428-352.000.
Iida, Jeffrey K.: *See*—
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, to Bridgestone Corporation. Sound insulating apparatus. 4,605,091, Cl. 181-224.000.
Iida, Takamitsu: *See*—
Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, 4,605,622, Cl. 435-182.000.
Iida, Yozo: *See*—
Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, 4,605,955, Cl. 358-29.000.
Ikeda, Masanobu: *See*—
Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, 4,605,437, Cl. 75-43.000.
Ikeda, Takuo: *See*—
Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, 4,605,442, Cl. 106-22.000.
Ikehara, Ichiro, to Nippon Notion Kogyo Co., Ltd. Button setting apparatus with optical position indicator. 4,605,150, Cl. 227-18.000.
Imaging Technology Incorporated: *See*—
Beg, Mirza R.; and Perl, Julius, 4,606,065, Cl. 382-18.000.
Imhof, Ernst: *See*—
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.

Imperial Chemical Industries, PLC: *See—*
Baker, Maurice G., 4,605,714, Cl. 526-125.000.
Balasubramanyan, Sugavanam; and Shephard, Margaret C., 4,605,747, Cl. 548-262.000.
INA Walzlager Schaeffler KG: *See—*
Kaiser, Theodor. 4,605,318, Cl. 384-482.000.
Inbar, Shai: *See—*
Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, 4,605,849, Cl. 250-216.000.
Index-Werke Komm. Ges. Hahn & Tessky: *See—*
Link, Helmut F.; and Schafer, Erich E., 4,604,923, Cl. 82-1.00C.
Industrial Insulations, Inc.: *See—*
Frahme, Carl E., 4,605,583, Cl. 428-126.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Boella, Marcello; and Mariotti, Ferruccio, 4,605,887, Cl. 318-594.000.
Musso, Pietro, 4,605,324, Cl. 400-144.200.
Ing. h.c.F. Porsche AG: *See—*
Soffge, Friedhelm; and Knauss, Hans-Peter, 4,604,915, Cl. 74-790.000.
Ingersoll-Rand Company: *See—*
Bukovitz, Ronald F.; and Vliet, Walter C., 4,605,078, Cl. 175-162.000.
Keith, Jeffrey S., 4,605,357, Cl. 417-228.000.
Pauley, Reginald W., 4,604,943, Cl. 91-59.000.
Inglese, Giulio S., to Uniprode. Ladder extension lock. 4,605,100, Cl. 182-213.000.
Inmont Corporation: *See—*
Daugherty, John W., 4,604,952, Cl. 101-451.000.
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, 4,605,690, Cl. 523-414.000.
Panush, Sol, 4,605,687, Cl. 523-171.000.
Inmos Corporation: *See—*
Bourassa, Ronald R., 4,604,789, Cl. 29-576.00C.
Inouchi, Teruo: *See—*
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.
Inoue, Hachiro, to Kabushiki Kaisha Tokyo Seisakusho. Under reaming pile bore excavating bucket and method of its excavation. 4,604,818, Cl. 37-195.000.
Inoue, Hidesuke: *See—*
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,605,834, Cl. 219-69.00W.
Inoue, Kiyoshi, 4,605,886, Cl. 318-565.000.
Inoue, Kiyoshi, 4,606,007, Cl. 364-474.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Precision TW electroerosion with staggering multiple V-notched guides. 4,605,834, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Feed-deviation preventive path-controlled machining method and apparatus. 4,605,886, Cl. 318-565.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. NC electroerosion method and apparatus. 4,606,007, Cl. 364-474.000.
Inoue, Takehisa: *See—*
Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, 4,605,799, Cl. 570-211.000.
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, to Director General of the Agency of Industrial Science and Technology. High modulus polyester. 4,605,727, Cl. 528-191.000.
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, to Hitachi, Ltd. Load/unload suspension device for a magnetic disc apparatus. 4,605,979, Cl. 360-105.000.
Inoue, Yoshihisa: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.
Insitute po Technicheska Kibernetika iRobotika: *See—*
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.
Institut Pasteur De Lyon Et Du Sud-Est: *See—*
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.
Interco, Incorporated: *See—*
Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.
International Business Machine Corp.: *See—*
Kohn, Harold, 4,604,966, Cl. 118-406.000.
International Business Machines Corporation: *See—*
Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, 4,605,194, Cl. 248-559.000.
Braslau, Norman, 4,605,893, Cl. 324-58.50B.
Daly, Timothy P., 4,605,354, Cl. 414-730.000.
Dansky, Allan H.; and Norsworthy, John P., 4,605,870, Cl. 307-443.000.
Georgiou, Christos J., 4,605,928, Cl. 340-825.940.
Gostomski, Dominic A., Jr.; and Price, Jerry G., 4,605,828, Cl. 200-5.00A.
Knepper, James A.; and Rose, Leroy, 4,605,218, Cl. 271-238.000.
Peters, Robert M.; Schnurmann, Henri D.; and Vidunas, Louis J., 4,606,025, Cl. 371-20.000.
International Flavors & Fragrances, Inc.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,605,165, Cl. 239-6.000.
International Standard Electric Corporation: *See—*
Schroder, Wolfgang, 4,606,053, Cl. 375-87.000.
Internationale Octrooi Maatschapij "Octropa" B.V.: *See—*
Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, 4,605,129, Cl. 206-623.000.
Irbe, Robert M.: *See—*
Horwath, Robert O.; and Irbe, Robert M., 4,605,619, Cl. 435-94.000.
Ishihama, Hiroshi: *See—*
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.
Ishii, Toshihiko; and Takasu, Hiromi, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. LED array device for printer. 4,605,944, Cl. 357-17.000.
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, to Toyo Jozo Kabushiki Kaisha. L-glutamic acid oxidase (H_2O_2-generating), its production and analytical method therefor. 4,605,615, Cl. 435-16.000.
Ishikawa, Kiichiro: *See—*
Kojima, Shinichi; and Ishikawa, Kiichiro, 4,604,783, Cl. 29-410.000.
Ishino, Tokio: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,605,295, Cl. 354-154.000.
Ishitsuka, Hideo: *See—*
Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, 4,605,674, Cl. 514-685.000.
Iskra, Michael J., to Personal Products Company. Softening of a composite absorbent product. 4,605,402, Cl. 604-368.000.
Isobe, Yoshinobu; and Iwasaki, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Air intake side secondary air supply system for an internal combustion engine. 4,604,984, Cl. 123-589.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, to Agency of Industrial Science and Technology. Process for producing ethanol. 4,605,796, Cl. 568-902.000.
Isozaki, Osamu, to Kansai Paint Company, Limited. Process for preparing organosilicon high condensation products. 4,605,446, Cl. 106-287.120.
Italcaps S.p.A.: *See—*
Taragna, Luigi; and Giovannelli, Antonio, 4,605,137, Cl. 215-254.000.
Taragna, Luigi; and Giovannelli, Antonio, 4,605,138, Cl. 215-254.000.
Ito, Takeyoshi; and Tsuruta, Masahiko, to Victor Company of Japan, Ltd. Recording and/or reproducing system for a 4-head type recording and/or reproducing apparatus. 4,605,976, Cl. 360-70.000.
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, to Toyo Seikan Kaisha, Ltd.; and Tokan Kogyo Co., Ltd. Synthetic resin vessel and heat sealed lid. 4,605,142, Cl. 220-359.000.
ITT Corporation: *See—*
Kadin, Joseph, 4,606,041, Cl. 375-1.000.
Wurst, Walter K., 4,606,021, Cl. 370-62.000.
ITW-Ateco GmbH: *See—*
Arff, Heino, 4,604,772, Cl. 24-68.00R.
ITW Limited: *See—*
Hewison, George D., 4,604,921, Cl. 81-429.000.
Meeks, Alan M. G., 4,604,777, Cl. 24-665.000.
Iwamoto, Junjiro: *See—*
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.
Iwasa, Masaaki: *See—*
Matsuda, Teruo; Shimizu, Shinkichi; and Iwasa, Masaaki, 4,605,779, Cl. 568-450.000.
Iwasaki, Eiji: *See—*
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,604,829, Cl. 49-352.000.
Iwasaki, Hiroaki: *See—*
Isobe, Yoshinobu; and Iwasaki, Hiroaki, 4,604,984, Cl. 123-589.000.
Iwashita, Kanau: *See—*
Otani, Junji; Okubo, Akira; and Iwashita, Kanau, 4,604,865, Cl. 60-293.000.
Iwata, Hiromu: *See—*
Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, 4,605,857, Cl. 250-372.000.
Izu, Masatsugu: *See—*
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,605,941, Cl. 357-2.000.
Izumi, Masahiro: *See—*
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, 4,605,917, Cl. 335-128.000.
J. M. Huber Corporation: *See—*
Goldsmith, John W.; and Rullman, Paul B., 4,605,248, Cl. 285-52.000.
J T Thorpe Company: *See—*
Hounsel, Mack A., 4,605,206, Cl. 266-283.000.
Jaakonmaki, Matti; and Raura, Pentti, to Rauma-Repola Oy Loviisan Tehtaat. Blade ring for shaver. 4,605,176, Cl. 241-240.000.
Jabarin, Saleh A., to Owens-Illinois, Inc. Multilayer plastic articles. 4,605,576, Cl. 428-35.000.

Jacques, Roberta C., to Minnesota Mining and Manufacturing Company. Hypothermic protection pad. 4,605,006, Cl. 128-401.000.

Jacubert, Serge: *See—*
Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, 4,605,547, Cl. 423-646.000.

Jakob, Gert: *See—*
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.

Jalabert, Georges E. P.: *See—*
Ott, Renaud P. L.; and Jalabert, Georges E. P., 4,604,843, Cl. 52-426.000.

James, Richard N., to Dysan Corporation. Miniature flexible magnetic disk assembly with motion limit stop. 4,605,125, Cl. 206-312.000.

James, Robert E.: *See—*
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.

Jamiolkowski, Dennis D.: *See—*
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,605,730, Cl. 528-357.000.

Janome Sewing Machine Co., Ltd.: *See—*
Shomura, Eiichi; and Goto, Taiji, 4,605,328, Cl. 400-662.000.

Jansma, Roger H.; and Sandberg, Karen R., to Nalco Chemical Company. Polyaldehyde/polyacetal compositions. 4,605,718, Cl. 526-240.000.

Janssens, Wilhelmus: *See—*
Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, 4,605,613, Cl. 430-562.000.

Japan Tobacco Inc.: *See—*
Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.

Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, to Tesa S.A. Instrument for measuring linear magnitudes. 4,604,808, Cl. 33-143.00M.

Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, to Eastman Kodak Company. Novel graft copolymers and process for the preparation thereof. 4,605,721, Cl. 527-312.000.

Jennings, Alfred R., Jr., to Mobil Oil Corporation. Apparatus for plugging a wellbore in high impulse fracturing. 4,605,061, Cl. 166-63.000.

Jin, Korda K., to United States of America, Air Force. Magnetic bias and delay linearity in a magnetostatic wave delay line. 4,605,911, Cl. 333-144.000.

Jodock, Marvin S.; and Maternus, Fred, to Lockheed Missiles & Space Company, Inc.; and National Carbide Tool, Inc. High speed drill reamer. 4,605,347, Cl. 408-224.000.

Johansson, Arne B., to Nordiskafilt AB. Forming fabric. 4,605,585, Cl. 428-224.000.

John, Christopher S., to Shell Oil Company. Process for the preparation of an aldehyde. 4,605,782, Cl. 568-484.000.

John Fluke Mfg. Co., Inc.: *See—*
Gurol, Ismail M., 4,604,799, Cl. 29-897.000.
Wiesmann, Thomas W., 4,606,009, Cl. 364-724.000.

Johnsen, Ottar, to AT&T Bell Laboratories. Apparatus and method for compression of facsimile information by pattern matching. 4,606,069, Cl. 382-56.000.

Johnson, David W., Jr.; MacChesney, John B.; and Rabinovich, Eleizer M., to AT&T Bell Laboratories. Sintered high-silica glass and articles comprising same. 4,605,428, Cl. 65-2.000.

Johnson, Jefrey K. Portable erectile vehicle shelter structure. 4,605,030, Cl. 135-117.000.

Johnson, M. M.: *See—*
Nowack, G. P.; and Johnson, M. M., 4,605,812, Cl. 585-845.000.

Johnson, Mark S.: *See—*
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., 4,605,801, Cl. 570-253.000.

Johnson, Myron J.; and Kao, Mark C. C., to Stewart-Warner Corporation. Runaway protective fuse valve. 4,605,039, Cl. 137-460.000.

Johnson, Thomas A.: *See—*
Ford, Michael E.; and Johnson, Thomas A., 4,605,770, Cl. 564-479.000.

Johnston, David: *See—*
Riley, Derek C.; and Johnston, David, 4,605,517, Cl. 540-52.000.

Johnston, David F. Method and apparatus for controlling power to an electronic precipitator. 4,605,424, Cl. 55-2.000.

Johnstone Railway Supply Mfg., Co. Inc.: *See—*
Rhodes, Wayne A., 4,605,154, Cl. 228-102.000.

Jollivet, Alain: *See—*
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.

Jolly, Thomas A. Cathode ray tube screen viewing aid. 4,605,291, Cl. 350-623.000.

Jones, Fred A., to Jones, Fred A.; and Jones, Jean. Soil cultivating apparatus. 4,605,072, Cl. 172-236.000.

Jones, Jean: *See—*
Jones, Fred A., 4,605,072, Cl. 172-236.000.

Jones, R. Sidney, Jr.: *See—*
Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., 4,605,607, Cl. 430-17.000.

Jorgensen, Robert W.; and Lewis, Thomas E., to Harvey Hubbell Incorporated. Molded outlet box with integral cable clamp. 4,605,816, Cl. 174-65.00R.

Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., to Dow Chemical Company, The. Molecular sieves as catalysts for preparation of 1,1,2-trichloroethane. 4,605,801, Cl. 570-253.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, 4,604,769, Cl. 16-238.000.

Juneau, Matthew K.: *See—*
Adams, J. Robert, Jr.; Mitrano, James R.; and Juneau, Matthew K., 4,605,539, Cl. 423-300.000.

Juzhelevsky, July A.: *See—*
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Kabushiki Kaisha Kito: *See—*
Ohno, Masayuki; and Maeda, Kazuo, 4,605,111, Cl. 192-16.000.

Kabushiki Kaisha Tokyo Seisakusho: *See—*
Inoue, Hachiro, 4,604,818, Cl. 37-195.000.

Kabushiki Kaisha Toshiba: *See—*
Higashi, Shinya, 4,605,998, Cl. 363-19.000.
Kanda, Motoya; and Sato, Yuji, 4,605,603, Cl. 429-59.000.
Miyazaki, Koichi; and Yamazaki, Masaya, 4,604,872, Cl. 62-156.000.
Wada, Masashi; Watanabe, Shigeyoshi; and Masuoka, Fujio, 4,606,011, Cl. 365-149.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, 4,605,168, Cl. 239-112.000.

Kabushiki Kaisha Yaskawa Denki Seisakusho: *See—*
Kumada, Shoji; and Asai, Hideyuki, 4,605,853, Cl. 250-231.0SE.

Kabushiki Kaishi Toshiba: *See—*
Saito, Yasuo, 4,606,062, Cl. 378-13.000.

Kadin, Joseph, to ITT Corporation. Frequency hopping data communication system. 4,606,041, Cl. 375-1.000.

Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., to University of California, The Regents of the. Plasmid vehicle for cloning in *Agrobacterium tumefaciens*. 4,605,627, Cl. 435-317.000.

Kadowaki, Kimihiro: *See—*
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.

Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, to Kozponti Elelmiszeripari Kutato Intezet. Grating monochromator. 4,605,306, Cl. 356-334.000.

Kagan, Michael. Suspendable display receptacle. 4,605,191, Cl. 248-318.000.

Kagi, Bruno, to St Sensortechnik AG. Hydraulic pressure receiver. 4,604,901, Cl. 73-731.000.

Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, to Siemens Aktiengesellschaft. Method for digital transmission of messages. 4,606,042, Cl. 375-2.100.

Kaiser, Theodor, to INA Walzlager Schaeffler KG. Elastic seal for use in antifriction bearings. 4,605,318, Cl. 384-482.000.

Kajaani OY: *See—*
Moilanen, Juhani; and Pietikainen, Markku, 4,605,900, Cl. 324-439.000.

Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, to Kyoto Pharmaceutical Industries, Ltd. Antibiotic amino acid derivatives of cephalosporins. 4,605,651, Cl. 514-200.000.

Kaku, Eisaburo: *See—*
Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, 4,605,940, Cl. 346-209.000.

Kaku, Hiroyuki: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Kalina, Alexander I. Method and apparatus for implementing a thermodynamic cycle with intercooling. 4,604,867, Cl. 60-653.000.

Kalman, Alajos: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Kalvatn, Ivar, to Ari Associates, Inc. Linkage mechanism for coupling two movable members. 4,605,334, Cl. 403-291.000.

Kalversberg, Manfred: *See—*
Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, 4,605,087, Cl. 180-248.000.

Kamakura Koki Kabushiki Kaisha: *See—*
Shimofuruta, Akihiro, 4,605,288, Cl. 350-552.000.

Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, to Shionogi & Co., Ltd. Production of 1-phthalidyl-5-fluorouracil derivatives. 4,605,738, Cl. 544-310.000.

Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, to Babcock-Hitachi Kabushiki Kaisha. Process for producing acetone. 4,605,776, Cl. 568-401.000.

Kamino, Yukishige: *See—*
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, 4,605,356, Cl. 417-102.000.

Kamiura, Hirofumi; and Natori, Takashi, to Nippon Valqua Kogyo Kabushiki Kaisha. Process for producing clutch facings. 4,605,527, Cl. 264-137.000.

Kamoshita, Katsuzo: *See—*
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.

Kamp, Harry W. Cane keeper. 4,605,190, Cl. 248-316.700.

Kanda, Motoya; and Sato, Yuji, to Kabushiki Kaisha Toshiba. Hermetically sealed metallic oxide-hydrogen battery using hydrogen storage alloy. 4,605,603, Cl. 429-59.000.

Kanda, Shoichi: *See*—
Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, 4,605,505, Cl. 252-8.514.

Kanehira, Kenichi: *See*—
Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, 4,605,878, Cl. 313-406.000.

Kanemasa, Akira, to NEC Corporation. Echo canceler with cascaded filter structure. 4,605,826, Cl. 179-170.200.

Kansai Paint Co., Ltd.: *See*—
Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, 4,605,622, Cl. 435-182.000.
Isozaki, Osamu, 4,605,446, Cl. 106-287.120.

Kao, Mark C. C.: *See*—
Johnson, Myron J.; and Kao, Mark C. C., 4,605,039, Cl. 137-460.000.

Karavaev, Alexandr A.: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Karlen, Lennart, to Gullfiber Akustik AB. Device for absorption of sound waves. 4,605,093, Cl. 181-295.000.

Kasugai, Makoto, to Mate, Inc. Process for culturing anaerobic bacteria and agents for preparing culture atmosphere. 4,605,617, Cl. 435-29.000.

Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, to Sumitomo Chemical Company, Limited. Process for producing a chelate resin. 4,605,706, Cl. 525-340.000.

Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, to Hitachi, Ltd. Semiconductor device. 4,605,945, Cl. 357-22.000.

Kato, Heizaburo, to Sankyo Manufacturing Company, Ltd. Roll feed apparatus. 4,605,147, Cl. 226-156.000.

Kato, Hiroko: *See*—
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Kato, Kazuo: *See*—
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.

Kato, Toshiro: *See*—
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.

Kato, Yoshinori: *See*—
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Katoh, Toshio: *See*—
Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.

Katsuragi, Yasuhiro: *See*—
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, to Thomas Jefferson University. Intra-oral control unit and system. 4,605,927, Cl. 340-825.190.

Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., to Kerr-McGee Chemical Corporation. Process for the preparation of a carbonaceous-derived solid fuel product. 4,605,421, Cl. 44-1.00F.

Kauffman, William J.: *See*—
Herr, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., 4,605,584, Cl. 428-142.000.

Kawachi Aluminium Casting Co., Ltd.: *See*—
Sumida, Akio, 4,605,054, Cl. 164-147.100.

Kawakami, Kanji: *See*—
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.

Kawakami, Koichi; and Sawada, Mitsuo, to Yoshida Kogyo K.K. Method and apparatus for automatically threading separable slide fastener stringers through sliders. 4,604,782, Cl. 29-409.000.

Kawamura, Satoshi: *See*—
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.

Kawanami, Shumpei; and Nakama, Hiroshi, to Dai-Ichi High Frequency Co., Ltd. Apparatus for dimensional inspection of a pipe spool, or for making or cutting and finishing at its both ends. 4,604,813, Cl. 33-529.000.

Kawasaki Steel Corp: *See*—
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Kawasaki Steel Corporation: *See*—
Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, 4,604,887, Cl. 72-368.000.

Kawasaki, Tatsuo: *See*—
Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, 4,604,887, Cl. 72-368.000.

Kawasaki, Yoshihiko: *See*—
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, 4,605,177, Cl. 242-35.50A.

Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, to Taoka Chemical Company, Limited. Aqueous ink composition. 4,605,442, Cl. 106-22.000.

Kawauchi, Masataka: *See*—
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.

Keane Monroe Corporation: *See*—
Sorber, Robert, 4,604,826, Cl. 49-31.000.

Kebabian, Paul L., to Environmental Research & Technology, Inc. Infrared detector for NDIR gas analysis. 4,605,313, Cl. 374-121.000.

Keiper Recaro GmbH & Co.: *See*—
Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, 4,605,192, Cl. 248-394.000.

Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., to Dow Chemical Company, The. Apparatus and method for forming a wear-resistant metal composition. 4,605,438, Cl. 75-67.00A.

Keith, Jeffrey S., to Ingersoll-Rand Company. Lubrication system for a compressor. 4,605,357, Cl. 417-228.000.

Keithahn, Julian D.: *See*—
Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., 4,605,195, Cl. 251-1.200.

Keller, Paul, to Kellex Industries Ltd. Ice machine. 4,604,875, Cl. 62-354.000.

Kellex Industries Ltd.: *See*—
Keller, Paul, 4,604,875, Cl. 62-354.000.

Kells Medical, Inc.: *See*—
Sheehan, Joseph C. M., 4,605,005, Cl. 128-335.000.

Kelly, William W., to Stanadyne, Inc. Accumulator injector. 4,605,166, Cl. 239-96.000.

Kelman, Charles D. Intraocular lens with miniature optic having expandable and contractible glare-reducing means. 4,605,409, Cl. 623-6.000.

Keltner, Heidi. Heated stadium cushion. 4,604,987, Cl. 126-204.000.

Kendall, Sherman L.: *See*—
Reynolds, Gordon S.; and Kendall, Sherman L., 4,605,019, Cl. 132-9.000.

Kennedy, Robert E.; and Neef, James D., to United States of America, Navy. Arresting and recovery system for test missiles. 4,604,938, Cl. 89-1.800.

Kerr, James A.: *See*—
Long, James R.; and Kerr, James A., 4,604,798, Cl. 29-764.000.

Kerr-McGee Chemical Corporation: *See*—
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,605,421, Cl. 44-1.00F.

Keuschnigg, Josef; and Kissich, Arnulf, to Voest-Alpine Aktiengesellschaft. Drive arrangement for the loading arms of a loading ramp for heading machines or longwall shearing machines. 4,605,119, Cl. 198-514.000.

Kewpie Kabushiki Kaisha: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Khanna, Pyare, to Syntex (U.S.A.) Inc. Acetaminophen analogs. 4,605,754, Cl. 560-19.000.

Kibby, Charles L.: *See*—
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.

Kicherer, Robert: *See*—
Fischer, Karl; Schreder, Felix; and Kicherer, Robert, 4,605,841, Cl. 219-449.000.

Kidokoro, Susumu; and Tajima, Eiichi, to Tajima Oyo Kako Kabushiki Kaisha. Process of forming ornamental joints. 4,605,463, Cl. 156-247.000.

Kiefer, Judy E.; Phillips, William V.; and Woodruff, Thomas E., to Eastman Kodak Company. Process for the purification of terephthalic acid. 4,605,763, Cl. 562-487.000.

Kikuchi, Masashi; and Matsuoka, Masahiro, to Shiseido Company Ltd. 5,8-dihydroxy naphthalene-1,4-dione derivative and a hair dye composition containing the same. 4,605,419, Cl. 8-426.000.

Kilkson, Henn: *See*—
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.

Kim, In S. Starting winding switching circuit for single-phase induction motors. 4,605,888, Cl. 318-786.000.

Kim, Kyusik. Aerodynamic heated steam generating apparatus. 4,605,184, Cl. 244-58.000.

Kimball, James F. Support for a bicycle and rider. 4,605,242, Cl. 280-294.000.

Kimberly-Clark Corporation: *See*—
Lassen, Frederich O., 4,605,405, Cl. 604-389.000.
Sayovitz, John J.; Mitchell, Kenneth J.; and Mathis, Michael P., 4,605,454, Cl. 156-73.100.

Kimura, Shigeki, to Mita Industrial Co., Ltd. Document reading device. 4,605,971, Cl. 358-285.000.

Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, to Citizen Watch Co., Ltd. Table mechanism. 4,604,833, Cl. 51-165.800.

King, Geoffrey W.: *See*—
Hatcher, Clive D.; Hill, Alan; and King, Geoffrey W., 4,605,351, Cl. 413-58.000.

King, Michael J.: *See*—
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., 4,605,447, Cl. 148-1.500.

Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, to Yoshitomi Pharmaceutical Industries, Ltd. Thermoresponsive recording paper sheet. 4,605,940, Cl. 346-209.000.

Kira, Takehiro, to Ushio Denki Kabushiki Kaisha. Exposure method of semiconductor wafer by mercury-vapor lamp. 4,605,301, Cl. 355-69.000.

Kirk, Glenn D., to Mai Basic Four, Inc. Switch mode converter and improved deadband control therefor. 4,605,997, Cl. 363-16.000.

Kirk, Thomas E.: *See*—
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.

Kirkham, James A. Digital graphic image analyzer. 4,604,963, Cl. 116-300.000.

Kisellev, Vladimir G.: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Kishi, Norimasa: *See*—
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.

Kishimoto, Shinzo: *See*—
Ohno, Shigeru; and Kishimoto, Shinzo, 4,605,611, Cl. 430-393.000.

Kissich, Arnulf: *See*—
Keuschnigg, Josef; and Kissich, Arnulf, 4,605,119, Cl. 198-514.000.

Kita, Toshiyuki, to Hokusei Nikkei Household Utensils Co., Ltd. Cooking vessel. 4,604,989, Cl. 126-369.000.

Kitagawa Industries Co., Ltd.: *See*—
Takahashi, Katsumasa, 4,604,776, Cl. 24-453.000.

Kitamura, Kengo; and Murata, Hitoshi, to Nissan Motor Company, Limited. Method for automatically attaching sub-assembly to main assembly and system thereof using industrial robots. 4,604,797, Cl. 29-783.000.

Kitao, Kazuhiko: *See*—
Kakeya, Nobuharu; Nishizawa, Susumu; Tomaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.

Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, to Mitsubishi Denki K.K.; and Kawasaki Steel Corp. Method of controlling the rolling efficiency in hot rolling. 4,606,006, Cl. 364-472.000.

Kittaka, Toshihiko: *See*—
Ogawa, Toshio; and Kittaka, Toshihiko, 4,605,876, Cl. 310-358.000.

Kiuru, Erkki S.: *See*—
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.

KLA Instruments Corporation: *See*—
Chadwick, Curt H.; and Desai, Anil A., 4,604,910, Cl. 74-96.000.

Klar, Heiner; and Mauthe, Manfred, to Siemens Aktiengesellschaft. Charge coupled device (CCD) input circuit operating according to the fill and spill principle. 4,606,060, Cl. 377-60.000.

Klebovich, Imre: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.

Klein, Gerhard: *See*—
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.

Kleschick, William A.: *See*—
Pearson, Norman R.; and Kleschick, William A., 4,605,433, Cl. 71-93.000.

Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, to Polaroid Corporation. Photosensitive devices having enhanced blue light response. 4,605,849, Cl. 250-216.000.

Klievoneit, Harold R.; and Esposito, Augustine G., to St. Florian Company. Rotary coupling for fluids. 4,605,249, Cl. 285-98.000.

Klimek, Albert A.: *See*—
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., 4,605,123, Cl. 206-0.500.

Klingensmith, James D.: *See*—
Hovland, Lyle W.; and Klingensmith, James D., 4,605,333, Cl. 403-27.000.

Klockner, Alfred. Apparatus for cooling or drying coarse-grained bulk material. 4,604,814, Cl. 34-172.000.

Klockner-Werke Aktiengesellschaft: *See*—
Gutjahr, Lothar, 4,605,367, Cl. 425-150.000.

Klotzer, Sieghart, to Agfa-Gevaert Aktiengesellschaft. Emulsion rich in silver chloride, photographic recording material and process for the production of photographic recordings. 4,605,610, Cl. 430-376.000.

Klumpyan, Joseph N.; and Ross, Richard J., to Baker Oil Tools, Inc. Subsurface injection tool. 4,605,062, Cl. 166-127.000.

Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, to Keiper Recaro GmbH & Co. Seat rail. 4,605,192, Cl. 248-394.000.

Knape & Vogt Manufacturing Company: *See*—
Bessinger, Walter L.; and Rutledge, Jerry D., 4,605,265, Cl. 384-20.000.

Knauer, Karl: *See*—
Pfleiderer, Hans-Joerg; and Knauer, Karl, 4,605,913, Cl. 333-166.000.

Knauss, Hans-Peter: *See*—
Soffge, Friedhelm; and Knauss, Hans-Peter, 4,604,915, Cl. 74-790.000.

Knepper, James A.; and Rose, Leroy, to International Business Machines Corporation. Constant force roll assembly. 4,605,218, Cl. 271-238.000.

Kniege, Wilfried: *See*—
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.

Knifton, John F., to Texaco Inc. Process for C_1–C_4 alkanol production from synthesis gas. 4,605,677, Cl. 518-700.000.

Knoop, David F.: *See*—
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.

Knorr, David B.; and Breedis, John F., to Olin Corporation. Copper alloys having an improved combination of strength and conductivity. 4,605,532, Cl. 420-472.000.

Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., to Babcock & Wilcox Company, The. Adhesive joint for diaphragm to sensor connection in pressure transducers. 4,604,900, Cl. 73-716.000.

Kobayashi, Tadashi; Nozaki, Shinya; and Yamada, Keiichi, to Diesel Kiki Co., Ltd. Electronically controlled distributor type fuel injection pump for internal combustion engines. 4,604,979, Cl. 123-449.000.

Kober, Alfred E., to Apollo Technologies Int'l Corp. Application of foam to improve flow characteristics of water-insoluble products. 4,605,568, Cl. 427-220.000.

Kober, Marvin: *See*—
Tsipenyuk, Pyotr; and Kober, Marvin, 4,604,796, Cl. 29-764.000.

Kobler, Ingo, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Device on a folding gripper cylinder to accept folded products. 4,605,212, Cl. 270-54.000.

Kobor, Jeno: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, to Hitachi, Ltd.; and Hitachi Microcomputer & Engineering, Ltd. Frequency-voltage converter. 4,605,901, Cl. 328-140.000.

Kobos, Robert K.: *See*—
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.

Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., to Chevron Research Company. Synthesis gas conversion using ROR-activated catalyst. 4,605,676, Cl. 518-700.000.

Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., to Chevron Research Company. Activated cobalt catalyst and synthesis gas conversion using same. 4,605,679, Cl. 518-700.000.

Kobylinski, Thaddeus P.: *See*—
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.

Koch, Wolfgang: *See*—
Heitz, Walter; and Koch, Wolfgang, 4,605,713, Cl. 525-537.000.
Heitz, Walter; and Koch, Wolfgang, 4,605,732, Cl. 528-388.000.

Kohaszati Gyarepito Vallalat: *See*—
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Kohler, David E.: *See*—
Maliszewski, Theodore V.; and Kohler, David E., 4,605,174, Cl. 241-52.000.

Kohn, Harold, to International Business Machine Corp. Continuous solder paste dispenser. 4,604,966, Cl. 118-406.000.

Kohsaka, Masanobu: *See*—
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Koizumi, Kenichi, to Fujikura Rubber Ltd. Vertical elongated chute. 4,605,095, Cl. 182-48.000.

Kojima, Shinichi; and Ishikawa, Kiichiro, to Yoshida Kogyo K. K. Method of and apparatus for forming element-free spaces in continuous slide fastener chain with fly strips. 4,604,783, Cl. 29-410.000.

Kokoszka, Joseph M.; and Tommasini, Rocco M., to United Technologies Corporation. Temperature probe for rotating machinery. 4,605,315, Cl. 374-144.000.

Kokumai, Hiroyuki: *See*—
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.

Kolb & Schule AG: *See*—
Arbter, Conrad, 4,605,179, Cl. 242-72.00B.

Koller, Allen C.: *See*—
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.

Komaroff, Iwan: *See*—
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.

Komori Printing Machinery Co., Ltd.: *See*—
Ichikawa, Ieyasu; and Arai, Shigeji, 4,604,951, Cl. 101-153.000.

Komuro, Isaku; Sano, Yoshikazu; and Shibata, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Function key assignments in a key telephone system. 4,605,825, Cl. 179-99.00R.

Kondo, Kazuo: *See*—
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Kondo, Toshio: *See*—
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.

Konishi, Keizo, to Tokai Rubber Industries, Ltd. Fluid-filled resilient bushing. 4,605,207, Cl. 267-57.10R.

Konishi, Takeshi: *See*—
Maeda, Tatsuo; and Konishi, Takeshi, 4,604,830, Cl. 49-374.000.

Konovalov, Viktor A.: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik,

Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.
Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., 4,605,520, Cl. 558-414.000.

Koog, Wolfgang, to Texaco Development Corporation. Apparatus for generating and cooling synthesis gas. 4,605,423, Cl. 48-69.000.

Koopman, Peter J., to Henny Penny Corporation. Horizontal holding cabinet for prepared food. 4,605,840, Cl. 219-401.000.

Koopmann, Gerd, to Leybold Heraeus GmbH. Differential bellows pressure switch. 4,605,832, Cl. 200-83.00D.

Koors, Mark A., to General Motors Corporation. Tube closure member having toggle action. 4,605,140, Cl. 220-233.000.

Kopp, Richard: *See*—
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,605,756, Cl. 560-351.000.

Korenhof, Abraham, to SKF Industrial Trading and Development Company B.V. Sealing ring for a rolling bearing. 4,605,319, Cl. 384-484.000.

Korf Engineering GmbH: *See*—
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Koromegawa, Isao: *See*—
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Koroyanagi, Masatoshi: *See*—
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.

Koshizuka, Atuo, to Fujitsu Limited. Sense amplifier. 4,606,012, Cl. 365-189.000.

Kostler, Dieter: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Kotler, Richard G. Reclaiming device. 4,605,118, Cl. 198-509.000.

Kovacs nee Kalman, Magdolna: *See*—
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.

Kowa Co., Ltd.: *See*—
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Kozponti Elelmiszeripari Kutato Intezet: *See*—
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.

Kratzer, Michael; and Born, Gustav V. R. System for measuring bleeding time in vitro. 4,604,894, Cl. 73-64.100.

Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., to Spetsialnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Po Pogruzhnomu Elektrooborudovaniju Dlya Burenia Skvazhin I Dobychi Nefti VNPO "Potentsial" . Method of and apparatus for generating shear seismic waves. 4,605,089, Cl. 181-114.000.

Krieg, Rudolf, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Flash lamp. 4,605,994, Cl. 362-202.000.

Krieger, Eberhard; and Moser, Theo, to Robert Bosch GmbH. Carton blank removal, erection and transfer apparatus. 4,605,393, Cl. 493-317.000.

Krieger, George H., to Cuscovitch, John F. Holder for detachable blades. 4,604,805, Cl. 30-330.000.

Krone, Bernard; and Ahler, Wilhelm, to Maschinenfabriken Bernard Krone GmbH. Wrapping apparatus for round bales in baling presses. 4,604,855, Cl. 53-64.000.

Kronstadt, Victor: *See*—
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, 4,605,114, Cl. 192-106.200.

Kruger, Robert J.: *See*—
Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., 4,605,503, Cl. 210-651.000.

Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, to Diehl GmbH & Co. Process for generating control signals in a predeterminable phase position, circuit arrangement for effectuating the process and utilization of the circuit arrangement. 4,606,058, Cl. 377-39.000.

Ku, Edmond C.: *See*—
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., 4,605,665, Cl. 514-431.000.

Kuder, James E.: *See*—
Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., 4,605,607, Cl. 430-17.000.

Kudo, Shozo, to Ricoh Company, Ltd. Adjusting data transmission rate based on received signal quality. 4,606,044, Cl. 375-13.000.

Kudoh, Kazunao; and Hashimoto, Yoshikazu, to Sumitomo Electric Industries, Ltd. Lead frame coated with aluminum as a packaging material in integrated circuits. 4,605,533, Cl. 428-622.000.

Kuehl, Guenter H.: *See*—
Chu, Pochen; and Kuehl, Guenter H., 4,605,787, Cl. 568-697.000.

Kuehne, Friedrich: *See*—
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, 4,606,042, Cl. 375-2.100.

Kuhl, David K.: *See*—
Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., 4,605,001, Cl. 128-305.000.

Kuhnert, Rudi; and Legall, Wolf-Dieter, to Veb Metaplast Quedlinburg. Cuvette for projection display of chemical experiments. 4,605,536, Cl. 422-99.000.

Kula, John: *See*—
Di Giovanni, John; and Kula, John, 4,605,004, Cl. 128-334.00R.

Kulgevich, Alexander, to Frayberg, Naum. Fire arm. 4,604,985, Cl. 124-56.000.

Kulish, Peter A. Apparatus for magnetic treatment of liquids. 4,605,498, Cl. 210-222.000.

Kulla, James P.; and Huff, Norman J., to Biological & Environmental Control Laboratories, Inc. Coating process for making antimicrobial medical implant device. 4,605,564, Cl. 427-2.000.

Kumada, Shoji; and Asai, Hideyuki, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Detection device. 4,605,853, Cl. 250-231.0SE.

Kumagai, Naotake: *See*—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Kumano, Shinji; and Murasaki, Motoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Keyboard device of electronic musical instrument. 4,604,937, Cl. 84-435.000.

Kumobayashi, Hidenori; and Akutagawa, Susumu, to Takasago Perfumery Co., Ltd. Rhodium-phosphine complex. 4,605,750, Cl. 556-7.000.

Kung, Viola T.; Martin, Francis J.; and Vollmer, Yolanda P., to Cooper Lipotech Inc. Large-liposome agglutination reagent and method. 4,605,630, Cl. 436-511.000.

Kunieda, Hisashi: *See*—
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Kunikyo, Hiroshi: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Kuno, Toshihiko: *See*—
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Kunschner, Alois: *See*—
Chmelir, Miroslav; and Kunschner, Alois, 4,605,401, Cl. 604-368.000.

Kuo, Yen-long: *See*—
Aprille, Thomas J., Jr.; Kuo, Yen-long; and Walker, Charles F., 4,606,043, Cl. 375-12.000.

Kuparinen, Pertti K. Foldable music stand. 4,605,193, Cl. 248-460.000.

Kuribayashi, Michio, to Fuji Photo Film Co., Ltd. Apparatus for converting field video signals into frame video signals. 4,605,951, Cl. 358-11.000.

Kuroiwa, Katsumasa: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.

Kurokawa, Masahiro: *See*—
Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, 4,605,765, Cl. 564-367.000.

Kuroki, Yasuaki: *See*—
Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, 4,605,387, Cl. 474-112.000.

Kurtz, Leonard D.; and LiCausi, Joseph M., to BioResearch Inc. Surgical drainage apparatus. 4,605,400, Cl. 604-319.000.

Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., to GKN Automotive Components Incorporated. Self-aligning tripod joint tulip cover and constant velocity joint incorporating same. 4,605,384, Cl. 464-111.000.

Kusano, Mitsuhiro, to NEC Corporation. Shaped beam reflector antenna. 4,605,935, Cl. 343-914.000.

Kusayama, Masahiro, to Yoshida Kogyo, K. K. Sealing slide fastener. 4,604,775, Cl. 24-389.000.

Kuschmierz, Heinz: *See*—
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, 4,604,978, Cl. 123-374.000.

Kutsuzawa, Masaki: *See*—
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Kuwahara, Takanori: *See*—
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Kyonomine, Masaru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Parking brake releasing mechanism. 4,604,913, Cl. 74-540.000.

Kyosan Electric Co., Ltd.: *See*—
Yuzurihara, Itsuo, 4,605,865, Cl. 307-270.000.

Kyoto Pharmaceutical Industries, Ltd.: *See*—
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.

Kyoto Prefectural Government: *See*—
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.

La Nuova Scolpitrice S.p.A.: *See*—
Giordanengo, Giovanni; and Cavallera, Giorgio, 4,605,049, Cl. 144-144.00R.

La Telemecanique Electrique: *See*—
Lemarquand, Pierre; and Moreau, Luc, 4,605,918, Cl. 335-261.000.

Labrador, Jacques A. L.: *See*—
Ometz, Pierre H. M.; and Labrador, Jacques A. L., 4,605,851, Cl. 250-223.00B.

Lacombe, Jacques: *See*—
Rose, Christian S.; and Lacombe, Jacques, 4,605,395, Cl. 604-9.000.
Lading, Stig: *See*—
Rasmussen, Erik; Lundquist, Gunnar; and Lading, Stig, 4,605,035, Cl. 137-240.000.
LaFlame, Thomas R. Support for a percussion instrument. 4,605,144, Cl. 224-265.000.
LaForest, Lance J.; and Taylor, Rita L., to Medical Engineering Corp. Mammary prosthesis having adjustable projection. 4,605,412, Cl. 623-8.000.
Laguerre, Michel: *See*—
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Lai, An-Cheng. Method of manufacturing shoes. 4,605,455, Cl. 156-78.000.
Laine, Richard M.: *See*—
Roberts, Daryl L.; and Laine, Richard M., 4,605,475, Cl. 204-130.000.
Lakatos, Nick: *See*—
Welber, Stanley; and Lakatos, Nick, 4,605,280, Cl. 350-96.200.
Lamb, Haydn R.: *See*—
Barr, John D.; and Lamb, Haydn R., 4,605,157, Cl. 228-132.000.
Landers, Cheryl W.: *See*—
Herr, Richard E., Jr.; Kauffman. William J.; and Landers, Cheryl W., 4,605,584, Cl. 428-142.000.
Landis, Michael E.: *See*—
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., 4,605,637, Cl. 502-64.000.
Landis, Scott: *See*—
Schmanski, Donald W.; and Landis, Scott, 4,605,204, Cl. 256-19.000.
Landrum, Clyde L.: *See*—
Alling, Richard L.; Shepard, Richard W.; Landram, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.
Landscheidt, Alfons, to Chemische Fabrik Stockhausen GmbH. Process for the production of N-substituted acrylic acid amides. 4,605,740, Cl. 544-376.000.
Lane, Peter, to Globe International Inc. Fire resistant oil spill barrier. 4,605,586, Cl. 428-240.000.
Lang, David M.; and Lewitzke, Richard W., to Becor Western Inc. Expandable operator's cab. 4,605,257, Cl. 296-26.000.
Lang, Kevin W., to General Foods Corporation. Fondant and food bars produced therefrom. 4,605,561, Cl. 426-93.000.
Lang, Thomas J. Selectively adjustable hinge. 4,604,770, Cl. 16-363.000.
Lang, Thomas P. Machine for the bending of stranded material. 4,604,885, Cl. 72-306.000.
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, to Carl-Zeiss-Stiftung. Surgical microscope for two surgeons. 4,605,287, Cl. 350-513.000.
Lange, Hans; Geisler, Edda; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Method of eluting reagent from reagent strips for chemical analyses and reagent strip therefor. 4,605,629, Cl. 436-166.000.
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, to Korf Engineering GmbH; and Voest-Alpine Aktiengesellschaft. Arrangement comprising a gasifier and a direct reduction furnace. 4,605,205, Cl. 266-160.000.
Langon, Bernard, to Aluminium Pechiney. Modular cathodic block and cathode having a low voltage drop for Hall-Heroult electrolysis tanks. 4,605,481, Cl. 204-243.00M.
Laporte Industries Limited: *See*—
Page, Michael J., 4,605,059, Cl. 165-163.000.
Lappalainen, Aatu V. K.: *See*—
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.
Larson, David A., to LFF & Associates. Method for making electroacoustic transducer apparatus. 4,604,792, Cl. 29-594.000.
Larson, Leigh R. Milking inflation including air vent. 4,604,969, Cl. 119-14.360.
Lasky, Arthur J.: *See*—
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Lassander, Erik; and Stenkvist, Sven-Einar, to Asea AB. DC arc furnace having starting equipment. 4,606,055, Cl. 373-108.000.
Lassen, Frederich O., to Kimberly-Clark Corporation. Dynamically moveable napkin. 4,605,405, Cl. 604-389.000.
Laughlin, William C.: *See*—
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,605,421, Cl. 44-1.00F.
Laurel Bank Machine Co., Ltd.: *See*—
Goi, Kowichi, 4,605,217, Cl. 271-124.000.
Lavielle, Gilbert; and Cudennec, Claude, to ADIR, S.A.R.L. Oxaazaphosphorine compounds and pharmaceutical compositions. 4,605,647, Cl. 514-85.000.
Lavoie, Michel. Comb. 4,605,020, Cl. 132-11.00R.
Lavrids Knudsen Maskinefabrik A/S: *See*—
Rasmussen, Erik; Lundquist, Gunnar; and Lading, Stig, 4,605,035, Cl. 137-240.000.
Leblanc, Jean, to Robert Bosch GmbH. Fuel injection pump. 4,604,980, Cl. 123-450.000.
Leblond, Henri: *See*—
Gohin, Christian; and Leblond, Henri, 4,604,898, Cl. 73-701.000.
Lee, Ching C. Foldable portable reclining chair. 4,605,261, Cl. 297-16.000.
Lee, Ross A., to Du Pont de Nemours, E. I., and Company. Silver sulfinate physical developer for heat-developable photographic films. 4,605,753, Cl. 556-111.000.
Legall, Wolf-Dieter: *See*—
Kuhnert, Rudi; and Legall, Wolf-Dieter, 4,605,536, Cl. 422-99.000.
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, to Paul Wurth S.A. Device for introducing dosed quantities of pulverized solid materials into a carrier gas stream. 4,605,342, Cl. 406-129.000.
Lehman, David L.: *See*—
Collier, John C.; and Lehman, David L., 4,604,795, Cl. 29-748.000.
Lehmann, Rolf; and Christ, Alfred, to Sulzer-Escher Wyss AG. Calender for pressure and thermal treatment of material webs. 4,605,366, Cl. 425-143.000.
Lehner, Alwin, to Soplar SA. Method of attaching a sheetlike object, e.g., a label, to a hollow body of plastics. 4,605,462, Cl. 156-245.000.
Leibee, Donald L.; and Crist, Owen K., to Marmon Group, The. Drill bit. 4,605,079, Cl. 175-410.000.
Leighton, John M. H.: *See*—
Tunnicliffe, Robert W.; and Leighton, John M. H., 4,604,831, Cl. 49-434.000.
Leitz, Helmut; and Rometsch, Gunter, to Carl-Zeiss-Stiftung. Angle-measuring instrument with a coarse-fine drive arrangement. 4,605,304, Cl. 356-138.000.
Le-Khac, Bi, to Atlantic Richfield Company. Thermodynamically miscible polymer composition. 4,605,700, Cl. 525-73.000.
Lemarquand, Pierre; and Moreau, Luc, to La Telemecanique Electrique. High speed current maximum tripping device. 4,605,918, Cl. 335-261.000.
Lemcke, Ulrich: *See*—
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.
Lemelson, Jerome H. Speech recognition control system and method. 4,605,080, Cl. 177-4.000.
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, to Centre National de la Recherche Scientifique; and Institut Pasteur De Lyon Et Du Sud-Est. Laser nephelometer for sensing antigens and antibodies characterized in having measuring cell comprised of capiliary tube with the diameter of laser beam. 4,605,305, Cl. 356-246.000.
Leone-Bay, Andrea, to Stauffer Chemical Company. Preparation of 1,1-diphenyl-2-carboethoxycyclopropane. 4,605,755, Cl. 560-101.000.
Lepage, Jean-Luc; and Soula, Gerard, to Rhone-Poulenc Specialities Chimiques. Preparation of silane from methyldichlorosilane and chlorosilanes. 4,605,543, Cl. 423-347.000.
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, to Commissariat a l'Energie Atomique. Process for examining a fuel assembly of a nuclear reactor and an examining machine for performing this process. 4,605,531, Cl. 376-252.000.
Leshchiner, Adolf: *See*—
Balazs, Endre A.; and Leshchiner, Adolf, 4,605,691, Cl. 524-27.000.
Lesher, Ernest G.; and Mieras, Cornelius E., to North American Products Corp. Carbide-tipped circular saw for metal cutting at low surface speeds. 4,604,933, Cl. 83-851.000.
L'Esperance, Paul M.: *See*—
Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,604,990, Cl. 126-418.000.
Lessel, Guy: *See*—
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.
Leung, Pak S.: *See*—
Goddard, Errol D.; and Leung, Pak S., 4,605,422, Cl. 44-51.000.
Leupold, Ernst I.: *See*—
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, 4,605,809, Cl. 585-640.000.
Leuty, David S. Truck bumper step. 4,605,098, Cl. 182-92.000.
Levan, Jean-Pol: *See*—
Eumurian, Gregoire; and Levan, Jean-Pol, 4,605,899, Cl. 324-258.000.
Levi, Sami S.: *See*—
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.
Levin, Herman W.: *See*—
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.
Levine, Edward H.; and Newbold, F. E. Dixon, to Rhode Gear USA. Bicycle mirror assembly. 4,605,289, Cl. 350-606.000.
Levine, Ralph: *See*—
Prussin, Samuel B.; Levine, Ralph; and Hintz, Warren J., 4,605,554, Cl. 424-66.000.
Levy, Roy J.: *See*—
Hirzel, Frederic J.; and Levy, Roy J., 4,606,052, Cl. 375-87.000.
Lewis, Thomas E.: *See*—
Jorgensen, Robert W.; and Lewis, Thomas E., 4,605,816, Cl. 174-65.00R.
Lewitzke, Richard W.: *See*—
Lang, David M.; and Lewitzke, Richard W., 4,605,257, Cl. 296-26.000.
Leybold Heraeus GmbH: *See*—
Koopmann, Gerd, 4,605,832, Cl. 200-83.00D.
LFF & Associates: *See*—
Larson, David A., 4,604,792, Cl. 29-594.000.
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., to Ciba-Geigy Corporation. Systemic treatment of splanchnic ischemia shock using 7-chloro-N-(3,4-dichlorophenyl)-2,3-dihydro-5-hydroxy-1-benzo-

thiepin-4-carboxamide 1,1-dioxide and pharmaceutically acceptable salts thereof. 4,605,665, Cl. 514-431.000.

LiCausi, Joseph M.: *See—*
Kurtz, Leonard D.; and LiCausi, Joseph M., 4,605,400, Cl. 604-319.000.

Liehr, Joachim G. Method of treatment of estrogen deficiency disease. 4,605,649, Cl. 514-182.000.

Lienert, Gerold, to Rockwell International Corporation. Shot peening machine. 4,604,881, Cl. 72-53.000.

Lighting Systems, Inc.: *See—*
Zelina, Francis J., Jr., 4,605,993, Cl. 362-183.000.

Ligon, Kathy D.; and Hoovler, Marcia J. Apparatus for supporting and managing a medical pig tail type fluid infusion device. 4,605,397, Cl. 604-179.000.

Lim, Wah L., to Honeywell Inc. Apparatus for laser gyro. 4,605,307, Cl. 356-350.000.

Lin, Joe S.: *See—*
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., 4,605,490, Cl. 208-143.000.

Lindberg, Frank A., to Westinghouse Electric Corp. Lead bonding of integrated circuit chips. 4,605,833, Cl. 219-56.220.

Ling, Nicholas C.: *See—*
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.

Link Electronics Limited: *See—*
Munnion, Derek, 4,605,296, Cl. 354-223.000.

Link, Helmut F.; and Schafer, Erich E., to Index-Werke Komm. Ges. Hahn & Tessky. Method of machining a workpiece between centers and a clamping device for performing this method. 4,604,923, Cl. 82-1.00C.

Lisa, Rudolph E.: *See—*
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,605,666, Cl. 514-474.000.

Lisapharma Spa: *See—*
Zagnoli, Giorgio; Conte, Ubaldo; and Colombo, Paolo, 4,605,741, Cl. 546-24.000.

Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, to Hoechst Aktiengesellschaft. Aluminosilicates and silica gels having a low content of transition elements, a process for their use in the conversion of methanol to olefins. 4,605,809, Cl. 585-640.000.

Liu, Tung: *See—*
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,605,595, Cl. 428-413.000.

Livingston, James J.; and Sorli, Duncan C., to Polaroid Corporation. Method of and apparatus for controlling the application of processing fluid. 4,605,297, Cl. 354-303.000.

Livshits, Inna Z.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Lobas, Igor P.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Lobeck, Walter G., Jr.: *See—*
Yevich, Joseph P.; and Lobeck, Walter G., Jr., 4,605,655, Cl. 514-252.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Jodock, Marvin S.; and Maternus, Fred, 4,605,347, Cl. 408-224.000.

Loev, Bernard; and Chan, Wan-Kit, to USV Pharmaceutical Corp. Polyene compounds useful in the treatment of allergic responses. 4,605,675, Cl. 514-720.000.

Lof Plastics Inc.: *See—*
Guy, Robert R., 4,605,457, Cl. 156-160.000.

Lofgren, Folke; and Soderstrom, Sven-Erik, to Asea Aktiebolag. Cloud height measuring device with compensation for window fouling. 4,605,302, Cl. 356-5.000.

Lohmann, Dieter: *See—*
Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., 4,605,712, Cl. 525-474.000.

Lohrey, Edwin J.: *See—*
Cho, Timothy C.; and Lohrey, Edwin J., 4,605,877, Cl. 313-272.000.

Lohrmann, Gerhard: *See—*
Engelhardt, Gunther; and Lohrmann, Gerhard, 4,605,145, Cl. 226-74.000.

Loitz, Jurgen, to Aline Loitz-Triebold. Electronic watch having a stepping motor. 4,605,311, Cl. 368-77.000.

Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., to Union Carbide Corporation. Separation and conversion processes with titanium-containing molecular sieves. 4,605,492, Cl. 208-310.00Z.

Long, James R.; and Kerr, James A., to United States of America, Army. Extractor for spring-lock pin connectors. 4,604,798, Cl. 29-764.000.

Lopez, Carlos A. Safety cover for electrical outlets. 4,605,817, Cl. 174-67.000.

L'Oreal: *See—*
Gueret, Jean-Louis H., 4,605,022, Cl. 132-82.00R.

Losapio, Peter F., to General Electric Company. Spring-loaded installation for electronic register module. 4,605,842, Cl. 235-1.00D.

Lucas Industries public limited company: *See—*
Downs, John, 4,604,784, Cl. 29-415.000.
Harvey, Ian J., 4,605,983, Cl. 361-154.000.

Ludwick, John J., to AT&T Bell Laboratories. Converter/line driver circuit for a line repeater. 4,606,046, Cl. 375-17.000.

Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, to SKW Trostberg Aktiengesellschaft. Plant for producing calcium carbide. 4,606,038, Cl. 373-24.000.

Lukacs, Laszlo : *See—*
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Lund, Gary K., to Dow Chemical Company, The. Process for polymerizing olefins in the presence of a catalyst prepared from organomagnesium compound, epihalohydrin reducing halide source and transition metal compound. 4,605,715, Cl. 526-143.000.

Lundquist, Gunnar: *See—*
Rasmussen, Erik; Lundquist, Gunnar; and Lading, Stig, 4,605,035, Cl. 137-240.000.

Lundquist, Ronald C.: *See—*
Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., 4,605,627, Cl. 435-317.000.

Luneau, John R., to Resolvex Corporation. Brushless tachometer/synchro. 4,605,889, Cl. 322-61.000.

Lupoli, Peter J., to Casco Products Inc. Control circuit for use with air-diverter valve of internal combustion engine. 4,604,864, Cl. 60-290.000.

Lynch, Eric R.: *See—*
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., 4,605,590, Cl. 428-295.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,605,209, Cl. 270-40.000.
Hechler, Hatto, 4,605,210, Cl. 270-41.000.
Hechler, Hatto, 4,605,213, Cl. 270-55.000.
Kobler, Ingo, 4,605,212, Cl. 270-54.000.

M.I.T. Polycart Corp.: *See—*
Rinkewich, Isaac, 4,605,267, Cl. 312-297.000.

MacBain, Ronald H.; and Rhodes, Tony, to Mattel, Inc. Animated figure toy having a unitary, multiple-function spring. 4,605,381, Cl. 446-321.000.

MacChesney, John B.: *See—*
Johnson, David W., Jr.; MacChesney, John B.; and Rabinovich, Eleizer M., 4,605,428, Cl. 65-2.000.

MacDowell, John F., to Corning Glass Works. CaO-Al_2O_3-SiO_2 glass hydraulic cements. 4,605,443, Cl. 106-104.000.

Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., to Control Data Corporation. Method and apparatus for detecting the channel to which an electronic receiver system is tuned. 4,605,958, Cl. 358-84.000.

Mack Trucks, Inc.: *See—*
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, 4,605,114, Cl. 192-106.200.

Macsea Marine Services Company, Inc.: *See—*
Wachi, Kiyoshi, 4,604,960, Cl. 114-222.000.

Madgavkar, Ajay, to Occidental Oil Shale, Inc. Upgrading shale oil by a combination process. 4,605,489, Cl. 208-87.000.

Madhaven, G. V. Bindu: *See—*
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.

Madison, Bryan L.: *See—*
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,605,509, Cl. 252-131.000.

Maeda, Kazuo: *See—*
Ohno, Masayuki; and Maeda, Kazuo, 4,605,111, Cl. 192-16.000.

Maeda, Masatoshi, to Matsushita Electric Works, Ltd. Inhalator. 4,604,999, Cl. 128-200.210.

Maeda, Tatsuo; and Konishi, Takeshi, to Mazda Motor Corporation. Flush-surfaced automobile door assembly. 4,604,830, Cl. 49-374.000.

Maehara, Naoyoshi, to Matsushita Electric Industrial Company, Limited. Ultrasonic liquid ejecting apparatus. 4,605,167, Cl. 239-102.000.

Maehashi, Yoshitsugu: *See—*
Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.

Maekawa, Kenji: *See—*
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl. 136-244.000.

Maghemite Inc.: *See—*
Whiteley, Eric, 4,605,874, Cl. 310-268.000.

Magnussen, Robert O., Jr. Fresh fruit packaging. 4,605,127, Cl. 206-525.000.

Mahana, Elliott; and Spector, George. Jumperciser. 4,605,219, Cl. 272-75.000.

Maher, Jack. Hay pre-conditioner. 4,604,857, Cl. 56-16.400.

Mai Basic Four, Inc.: *See—*
Kirk, Glenn D., 4,605,997, Cl. 363-16.000.

Maier, Ludwig, to CIBA-GEIGY Corporation. Herbicidal and plant-growth-regulating (2-nitro-5-aryloxy-phenylamino)-alkylphosphine oxide derivatives and compositions. 4,605,434, Cl. 71-94.000.

Mailliet, Pierre: *See—*
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, 4,605,342, Cl. 406-129.000.

Main Electric Construction, Inc.: *See—*
Torgrimson, Donald L., 4,605,237, Cl. 280-47.240.

Mainprice, Walter H. Tree cradle. 4,604,825, Cl. 47-76.000.

Makimura, Osamu: *See—*
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, 4,605,591, Cl. 428-332.000.

Makino, Hirohisa: *See*—
Narita, Yoshinori; and Makino, Hirohisa, 4,604,779, Cl. 29-156.4WL.

Makogon, Anatoly I.: *See*—
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Maktheshim Chemical Works Ltd.: *See*—
Yaacov, Yoav-Bar; and Minke, Ram, 4,605,708, Cl. 525-423.000.

Malette, William G.; and Quigley, Herbert J., Jr. Method of altering growth and development and suppressing contamination microorganisms in cell or tissue culture. 4,605,623, Cl. 435-240.000.

Malik, Randhir S.: *See*—
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.

Maliszewski, Theodore V.; and Kohler, David E., to Combustion Engineering, Inc. Vane wheel arrangement with nihard wear plates. 4,605,174, Cl. 241-52.000.

Malloy, Barry T.: *See*—
Sgourakes, George E.; Angelosanto, John P.; and Malloy, Barry T., 4,604,891, Cl. 73-4.00R.

Maloney, James E.; and McDonell, James A., to Diamond Shamrock Chemicals Company. Low-foaming, pH sensitive, alkylamine polyether surface active agents and methods for using. 4,605,773, Cl. 564-505.000.

Malz, Russell E., Jr.; and Greenfield, Harold, to Uniroyal Chemical Company, Inc. Process for the production of 2,2,6,6-tetraalkyl-4-piperidylamines. 4,605,743, Cl. 546-186.000.

Manchester R & D Partnership: *See*—
Fergason, James L., 4,605,284, Cl. 350-334.000.

Mandoki, Jorge W., to Celanese Mexicana S.A. Depolymerization of condensation polymers. 4,605,762, Cl. 562-483.000.

Mannesmann AG: *See*—
Engelhardt, Gunther; and Lohrmann, Gerhard, 4,605,145, Cl. 226-74.000.

Mannesmann Aktiengesselschaft: *See*—
Zacharias, Karl, 4,605,829, Cl. 200-52.00R.

Marcus, Bonita K.: *See*—
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,605,492, Cl. 208-310.00Z.

Marine Biological Laboratory: *See*—
Dunham, Philip B.; and Weissmann, Gerald, 4,605,618, Cl. 435-29.000.

Marini, Jean; and Audenard, Bernard, to Framatome & CIE. Method and apparatus for acoustically monitoring an industrial plant. 4,605,924, Cl. 340-683.000.

Mariotti, Ferruccio: *See*—
Boella, Marcello; and Mariotti, Ferruccio, 4,605,887, Cl. 318-594.000.

Mark, James S., to Canadian General Electric Co., Ltd. Infra-red telemetry system. 4,605,925, Cl. 340-870.290.

Mark, Victor, to General Electric Company. Polyestercarbonate from spiro dihydric phenol. 4,605,726, Cl. 528-190.000.

Markley, Dean A.: *See*—
Felter, Richard E.; and Markley, Dean A., 4,605,570, Cl. 427-386.000.

Markovitz, Mark: *See*—
Stevens, Robert W.; and Markovitz, Mark, 4,605,581, Cl. 428-96.000.

Marmon Group, The: *See*—
Leibee, Donald L.; and Crist, Owen K., 4,605,079, Cl. 175-410.000.

Marom, Itshak. Lifting and maneuvering device for motor vehicles. 4,605,086, Cl. 180-202.000.

Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., to Standard Oil Company, The. Electrodes for double layer capacitors. 4,605,989, Cl. 361-433.000.

Marshall, Allen T., to Ensco, Inc. Method and apparatus for detection of organic fluids. 4,605,923, Cl. 340-604.000.

Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., to Cubic Corporation. Stripline circuits isolated by adjacent decoupling strip portions. 4,605,915, Cl. 333-238.000.

Marson, James E. Cam-follower transfer mechanism for controlling relative rotational movement. 4,604,909, Cl. 74-63.000.

Martensson, Ulf S.: *See*—
Bjornberg, Arne; Martensson, Ulf S.; and Paulsson, Karin M., 4,605,544, Cl. 423-508.000.

Martin, Eileen M.: *See*—
Grasberger, Christine L.; and Martin, Eileen M., 4,604,758, Cl. 2-49.00R.

Martin, Francis J.: *See*—
Kung, Viola T.; Martin, Francis J.; and Vollmer, Yolanda P., 4,605,630, Cl. 436-511.000.

Martin, John C.: *See*—
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.

Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., to Tocom Inc. Master/slave converter system. 4,606,072, Cl. 455-4.000.

Martin, William C., to Teledyne Penn-Union. Compression tool. 4,604,890, Cl. 72-453.160.

Martinelli, Ramon U., to RCA Corporation. Semiconductor structure for electric field distribution. 4,605,948, Cl. 357-34.000.

Marui, Kuniyoshi: *See*—
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.

Marui, Takao; and Uwani, Tetsuo, to Yuasa Battery Company Limited. Method of manufacturing battery plate groups. 4,604,794, Cl. 29-623.100.

Marusan Packing Manufacturing Co.: *See*—
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Maruyama, Eiichi: *See*—
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.

Maschinenfabriken Bernard Krone GmbH: *See*—
Krone, Bernard; and Ahler, Wilhelm, 4,604,855, Cl. 53-64.000.

Maska, Rudolf: *See*—
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.

Maslanka, William W., to Hercules Incorporated. Wet strength resin from methylbis(aminopropyl)amine, oxalic acid ester, saturated aliphatic diester and epihalohydrin. 4,605,709, Cl. 525-430.000.

Massen, Robert, to Endress u. Hauser GmbH u. Co. Sensor for the detection of random signals which are suitable for correlative signal processing. 4,604,904, Cl. 73-861.060.

Masuda, Yoshiaki; Fukuo, Hidetoshi; and Yamamoto, Masaji, to Sakura Color Products Corporation. Ink composition for indicating progress and completion of vulcanization of rubber products. 4,605,441, Cl. 106-21.000.

Masuda, Yoshinori: *See*—
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.

Masuoka, Fujio: *See*—
Wada, Masashi; Watanabe, Shigeyoshi; and Masuoka, Fujio, 4,606,011, Cl. 365-149.000.

Mate, Inc.: *See*—
Kasugai, Makoto, 4,605,617, Cl. 435-29.000.

Maternus, Fred: *See*—
Jodock, Marvin S.; and Maternus, Fred, 4,605,347, Cl. 408-224.000.

Mathis, Michael P.: *See*—
Sayovitz, John J.; Mitchell, Kenneth J.; and Mathis, Michael P., 4,605,454, Cl. 156-73.100.

Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, to Eszakmagyarorszagi Vegyimuvek. Substituted acetamide derivatives with an antidote action, antidote compositions containing such compounds, selective herbicide compositions containing these antidotes and a process for the preparation of substituted acetamide derivatives. 4,605,764, Cl. 564-209.000.

Matsuda, Masaaki: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,605,706, Cl. 525-340.000.

Matsuda, Teruo; Shimizu, Shinkichi; and Iwasa, Masaaki, to Sumitomo Chemical Company, Limited. Method for the production of tiglic aldehyde. 4,605,779, Cl. 568-450.000.

Matsui, Kazuma: *See*—
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.

Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, to NEC Corporation. Method for forming thin films by absorption. 4,605,566, Cl. 427-43.100.

Matsui, Takeaki: *See*—
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.

Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, to Hitachi, Ltd. Thermal transfer recording apparatus. 4,605,938, Cl. 346-76.0PH.

Matsuoka, Masahiro: *See*—
Kikuchi, Masashi; and Matsuoka, Masahiro, 4,605,419, Cl. 8-426.000.

Matsuoka, Tsutomu: *See*—
Nomoto, Yoshitaka; and Matsuoka, Tsutomu, 4,604,868, Cl. 60-286.000.

Matsushita Electric Industrial Company, Limited: *See*—
Machara, Naoyoshi, 4,605,167, Cl. 239-102.000.
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, 4,605,974, Cl. 360-62.000.

Matsushita Electric Works, Ltd.: *See*—
Maeda, Masatoshi, 4,604,999, Cl. 128-200.210.
Moriwaki, Hiroshi; Yamamura, Yukio; and Fujikawa, Kazuhiko, 4,604,993, Cl. 128-24.200.
Yamamoto, Tadashi; Ichiya, Mitsuo; and Yamaguchi, Keizo, 4,604,800, Cl. 30-41.000.

Matsutani, Kanji, to Matsutani Seisakusho. Twisting apparatus of root canal reamer or file material and method for manufacturing root canal reamer or file. 4,604,884, Cl. 72-299.000.

Matsutani Seisakusho: *See*—
Matsutani, Kanji, 4,604,884, Cl. 72-299.000.

Matsuura, Takayuki; and Miyazaki, Kenji, to Sumitomo Electric Industries, Ltd. Method for stranding profile strands. 4,604,860, Cl. 57-9.000.

Matsuura, Takayuki; and Miyazaki, Kenji, to Sumitomo Electric Industries, Ltd. Method and apparatus for stranding profile strands. 4,604,861, Cl. 57-9.000.

Matsuura, Yoshikazu, to Teraoka Seiko Co., Ltd. Combined weighing apparatus. 4,605,082, Cl. 177-25.000.

Matsuyama, Shuji: *See*—
Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, 4,605,857, Cl. 250-372.000.

Mattel, Inc.: *See*—
Halford, Wayne R.; and Nakano, Walter S., 4,605,230, Cl. 273-129.0AP.
Horiuchi, Shigeyuki, 4,605,383, Cl. 446-376.000.
MacBain, Ronald H.; and Rhodes, Tony, 4,605,381, Cl. 446-321.000.

Matthews, Hugh B., to Sperry Corporation. Air bearing head displacement sensor and positioner. 4,605,977, Cl. 360-103.000.

Maurer, Helmut: *See*—
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, 4,605,795, Cl. 568-867.000.

Maurin, Louis J., III: *See*—
Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., 4,605,800, Cl. 570-228.000.

Mauthe, Manfred: *See*—
Klar, Heiner; and Mauthe, Manfred, 4,606,060, Cl. 377-60.000.

Maxwell, Ian: *See*—
East, John; and Maxwell, Ian, 4,604,880, Cl. 72-9.000.

Maxwell, Thurman L. Portable tree stand. 4,605,097, Cl. 182-92.000.

Mayer, Harry W.: *See*—
Haynes, Hendrick W.; and Mayer, Harry W., 4,605,084, Cl. 180-70.100.

Mayers, John L., to United Technologies Corporation. Exhaust nozzle construction. 4,605,169, Cl. 239-265.290.

Mayhew, Roger D.; and Reak, B. Bennett, to Weasler Engineering, Inc. Universal joint guard. 4,605,332, Cl. 403-23.000.

Mayszak, Michael T., to Reliance Electric Company. Cable clamp, body portion therefor and method of manufacturing same. 4,604,888, Cl. 72-379.000.

Mazda Motor Corporation: *See*—
Maeda, Tatsuo; and Konishi, Takeshi, 4,604,830, Cl. 49-374.000.
Nomoto, Yoshitaka; and Matsuoka, Tsutomu, 4,604,868, Cl. 60-286.000.

Mazurek, Harry, to Atlantic Richfield Company. Process for catalytic conversion of ethylene to higher hydrocarbons. 4,605,807, Cl. 585-517.000.

McCandless, Harry E.; and Villanyi, Sigmund T., to RCA Corporation. Multibeam electron gun having a cathode-grid subassembly and method of assembling same. 4,605,880, Cl. 313-414.000.

McClaflin, Gifford G.; Bourne, Henry A.; and Whitfill, Donald L., to Conoco Inc. Method for producing heavy, viscous crude oil. 4,605,069, Cl. 166-310.000.

McCown, Andrew W.: *See*—
Eden, James G.; McCown, Andrew W.; and Geohegan, David B., 4,606,034, Cl. 372-57.000.

McCoy-Ellison, Inc.: *See*—
Alexander, James L., 4,605,181, Cl. 242-149.000.

McDonell, James A.: *See*—
Maloney, James E.; and McDonell, James A., 4,605,773, Cl. 564-505.000.

McEwen, James A., to Western Clinical Engineering Ltd. Pressurizing cuff. 4,605,010, Cl. 128-686.000.

McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., to Sohio Alternate Energy Development Company. Method for the beneficiation of oxidized coal. 4,605,420, Cl. 44-1.00R.

McGarry, Phillip E.: *See*—
Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., 4,605,494, Cl. 209-166.000.

McGee, Daniel P. C.: *See*—
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.

McGettigan, Philip A.; and Roberge, Jean M., to Northern Telecom Limited. Manufacture of telecommunications cable cores. 4,604,862, Cl. 57-264.000.

McGinn, Michael, to Motorola, Inc. Universal vertical countdown and method for video display. 4,605,965, Cl. 358-148.000.

McGrath, David W.: *See*—
Grebel, Robert E.; Neunherz, Robert K.; and McGrath, David W., 4,604,956, Cl. 108-147.000.

McGregor, John C., Jr. Method and apparatus for single step formation of spherical retainer. 4,604,886, Cl. 72-354.000.

McIntosh, Edwin J., to Bright Of America, Inc. Mirror with adhesive/-magnetic mirror supporting strips. 4,605,292, Cl. 350-641.000.

McKay, Robert S. Toy dragstrip and starting tower. 4,605,229, Cl. 273-86.00R.

McKeough, David T.: *See*—
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,605,724, Cl. 528-73.000.

McKernan, Thomas J.; and Berry, Gordon C., to Haworth, Inc. Pivoted drawer lock mechanism. 4,605,266, Cl. 312-219.000.

McKibben, David P., to Sir Pegasus, Inc. Therapeutic horseshoe. 4,605,071, Cl. 168-12.000.

McMann, Renville H.: *See*—
Goldberg, Abraham A.; McMann, Renville H.; and Rossi, John P., 4,605,950, Cl. 358-11.000.

McSpadden, John T. Powered dental flossing device. 4,605,025, Cl. 132-92.00R.

Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., to Singer Company, The. Crossover traveling wave feed for microstrip antenna array. 4,605,931, Cl. 343-700.0MS.

Meador, Richard A., to NL Industries, Inc. Transformer cable connector. 4,605,268, Cl. 339-16.00C.

Medal, Hans J.: *See*—
Buehler, John D.; Medal, Hans J.; and Rhoa, Gregory A., 4,605,551, Cl. 424-38.000.

Medical Engineering Corp.: *See*—
LaForest, Lance J.; and Taylor, Rita L., 4,605,412, Cl. 623-8.000.

Medtronic, Inc.: *See*—
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., 4,605,406, Cl. 623-1.000.
Heraly, Neil H., 4,605,007, Cl. 128-419.0PT.

Meeks, Alan M. G., to ITW Limited. Spring retainers. 4,604,777, Cl. 24-665.000.

Meermoller, Theodor, to Westfalia Separator AG. Valve that automatically regulates an operating partial vacuum in milking systems. 4,605,040, Cl. 137-489.000.

Meienhofer, Johannes A.: *See*—
Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, 4,605,641, Cl. 514-12.000.

Meifi, Nicholas W., to Concrete Pipe and Products Corp. Concrete noise barrier. 4,605,090, Cl. 181-210.000.

Meloy, Gilbert K., to Twinoak Products, Inc. Cleaning and disinfecting systems including color display means. 4,605,534, Cl. 422-37.000.

Mendelsohn, Morris A.; and Navish, Francis W., Jr., to Westinghouse Electric Corp. Highly resilient polyurethane elastomer. 4,604,940, Cl. 89-1.816.

Menear, Michael J. Wind-propelled craft. 4,604,959, Cl. 114-39.000.

Mepaco, Inc.: *See*—
Giese, John D., 4,604,949, Cl. 100-194.000.

Mercante International A/S: *See*—
Hyltoft, Hans C., 4,605,215, Cl. 271-9.000.

Mercer, William E., II: *See*—
Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., 4,605,438, Cl. 75-67.00A.

Merck & Co., Inc.: *See*—
Bhattacharya, Apurba, 4,605,760, Cl. 562-461.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,605,663, Cl. 514-425.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,605,664, Cl. 514-425.000.
Dolling, Ulf H., 4,605,761, Cl. 562-461.000.
Remy, David C., 4,605,660, Cl. 514-290.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

Meschke, Harry: *See*—
Zielinski, Erich; and Meschke, Harry, 4,604,941, Cl. 89-47.000.

Metal Box Public Limited Company: *See*—
East, John; and Maxwell, Ian, 4,604,880, Cl. 72-9.000.

Metcalf, Maurice E. Mechanical seal assembly with orientation maintaining means. 4,605,234, Cl. 277-81.00R.

Metcalfe, Arthur G., to Solar Turbines Incorporated. Method of fabricating a component having internal cooling passages. 4,604,780, Cl. 29-156.80R.

Meyer, Franklin, Jr. Gage head actuating coupler. 4,604,809, Cl. 33-178.00E.

Miale, Joseph N.: *See*—
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., 4,605,637, Cl. 502-64.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,803, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,804, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,805, Cl. 585-415.000.

Michaelson, Henry W. Compressible fluid moveable electrode. 4,605,483, Cl. 204-280.000.

Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, to VEB Schwermaschinenbau Karl Liebknecht Magdeburg. Use of methane, methane and hydrogen, or natural gas for pyrolysis gas. 4,605,487, Cl. 208-408.000.

Michigan State University: *See*—
Pinnavaia, Thomas J.; Mortland, Max M.; and Boyd, Stephen A., 4,605,621, Cl. 435-177.000.

Mid-West Conveyor Company, Inc.: *See*—
Vanderlinde, Leendert A.; and Collier, Byron T., 4,605,120, Cl. 198-781.000.

Middleton, Harold G.: *See*—
Blattman, Daniel A.; and Middleton, Harold G., 4,605,922, Cl. 340-552.000.

Mieras, Cornelius E.: *See*—
Lesher, Ernest G.; and Mieras, Cornelius E., 4,604,933, Cl. 83-851.000.

Mijares, Ernest R.: *See*—
Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., 4,604,954, Cl. 102-434.000.

Mikulas, Martin M., Jr.; and Rhodes, Marvin D., to United States of America, National Aeronautics and Space Administration. Deployable M-braced truss structure. 4,604,844, Cl. 52-632.000.

Millauer, Christian: *See*—
Wiedmann, Werner; and Millauer, Christian, 4,605,444, Cl. 106-138.000.

Miller, Allen, to Gould Instruments, Ltd. Differential pair amplifier enhancement circuit. 4,605,906, Cl. 330-149.000.

Miller, Charles P., to Miller Formless Co., Inc. Conveyor system used with apparatus for unloading comminuted materials. 4,605,116, Cl. 198-364.000.

Miller, Chauncey S., to TRW Inc. Method and apparatus for detecting an equalizer training period in a receiving-end modem. 4,606,045, Cl. 375-13.000.

Miller Formless Co., Inc.: *See*—
Miller, Charles P., 4,605,116, Cl. 198-364.000.

Miller, Kenneth F. Hot water preheater system. 4,604,991, Cl. 126-437.000.

Mills, Raymond C., Sr.: *See*—
Duesberg, Joseph D.; and Mills, Raymond C., Sr., 4,605,155, Cl. 228-119.000.

Minagawa, Kazushi: *See*—
Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, 4,605,955, Cl. 358-29.000.

Minerd, Richard A. Combination tree seat and animal drag. 4,605,094, Cl. 182-20.000.

Ministry of International Trade & Industry: *See*—
Terashima, Kazutaka; and Fukuda, Tsuguo, 4,606,037, Cl. 373-6.000.

Minke, Ram: *See*—
Yaacov, Yoav-Bar; and Minke, Ram, 4,605,708, Cl. 525-423.000.

Minko, Anatoly A.: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Minnesota Mining and Manufacturing Company: *See*—
Guilbert, Curtis R., 4,605,710, Cl. 525-438.000.
Jacques, Roberta C., 4,605,006, Cl. 128-401.000.
Owens, Kenneth E.; and Hatch, Robert A., 4,605,594, Cl. 428-373.000.
Paquette, Susan Z.; and Falaas, Dennis O., 4,605,592, Cl. 428-334.000.

Misaki, Hideo: *See*—
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, 4,605,615, Cl. 435-16.000.

Mita Industrial Co., Ltd.: *See*—
Kimura, Shigeki, 4,605,971, Cl. 358-285.000.

Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Inc. Process for production of β-phenylserine. 4,605,759, Cl. 562-444.000.

Mitchell, Curt E., to NCR Corporation. Method of manufacturing printed circuit boards. 4,605,471, Cl. 156-645.000.

Mitchell, Kenneth J.: *See*—
Sayovitz, John J.; Mitchell, Kenneth J.; and Mathis, Michael P., 4,605,454, Cl. 156-73.100.

Mitchell, Ronald R. Switch for protecting a freon compressor. 4,605,831, Cl. 200-83.00R.

Mitrano, James R.: *See*—
Adams, J. Robert, Jr.; Mitrano, James R.; and Juneau, Matthew K., 4,605,539, Cl. 423-300.000.

Mitsubishi Denki K.K.: *See*—
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Mitsuhashi, Masamichi, 4,605,885, Cl. 318-317.000.
Morishita, Akira; and Okamoto, Kyoichi, 4,604,907, Cl. 74-7.00E.
Yoshimoto, Masahiko, 4,606,013, Cl. 365-200.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.
Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, 4,605,765, Cl. 564-367.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, 4,605,609, Cl. 430-232.000.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Mitsuhashi, Masamichi, to Mitsubishi Denki Kabushiki Kaisha. Method of controlling rotation speed of motor. 4,605,885, Cl. 318-317.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.

Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, to BASF Aktiengesellschaft. Thermoplastic molding compositions containing polycarbonate and an acrylate graft copolymer. 4,605,699, Cl. 525-67.000.

Mitutoyo Mfg. Co., Ltd.: *See*—
Ichikawa, Souji, 4,605,274, Cl. 339-89.00R.

Miura, Yasuhiro: *See*—
Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, 4,605,857, Cl. 250-372.000.

Miura, Yasunao: *See*—
Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, 4,604,869, Cl. 60-311.000.

Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, to Toray Industries, Inc. Process for separating a halogenated toluene isomer. 4,605,799, Cl. 570-211.000.

Mixon, James L., Jr., to AMP Incorporated. Electrical terminal. 4,605,279, Cl. 339-276.00R.

Miyachi, Hiroshi: *See*—
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Miyagi, Ken, to Canon Kabushiki Kaisha. Control unit. 4,605,884, Cl. 318-314.000.

Miyajima, Katumi: *See*—
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.

Miyakawa, Akira: *See*—
Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, 4,606,066, Cl. 382-41.000.

Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Novel polyamine. 4,605,765, Cl. 564-367.000.

Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, to Suntory Ltd. 1-substituted pyrrolizidine derivatives and antiarrhythmic use thereof. 4,605,662, Cl. 514-413.000.

Miyaoka, Norikuni: *See*—
Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.

Miyazaki, Kenji: *See*—
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,860, Cl. 57-9.000.
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,861, Cl. 57-9.000.

Miyazaki, Koichi; and Yamazaki, Masaya, to Kabushiki Kaisha Toshiba. Heat pump type air conditioning apparatus having a controlled variable capacity compressor. 4,604,872, Cl. 62-156.000.

Miyazaki, Tadao, to Okumura Engineering Works Co., Ltd. Butterfly valve. 4,605,201, Cl. 251-305.000.

Miyoshi, Kenichi; Suzuki, Masanori; and Fuwa, Toru, to Wakunaga Seiyaku Kabushiki Kaisha. Oligonucleotide derivatives. 4,605,735, Cl. 536-27.000.

Mizuhara, Howard, to GTE Products Corporation. Thermally insulated piston. 4,604,945, Cl. 92-176.000.

Mizuno, Keiichiro: *See*—
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Mobay Corporation: *See*—
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,605,774, Cl. 568-48.000.

Mobil Oil Corporation: *See*—
Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, 4,605,678, Cl. 518-700.000.
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., 4,605,637, Cl. 502-64.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,803, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,804, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,805, Cl. 585-415.000.
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,605,488, Cl. 208-78.000.
Chu, Pochen; and Kuehl, Guenter H., 4,605,787, Cl. 568-697.000.
Djabbarah, Nizar F., 4,605,066, Cl. 166-273.000.
Haddad, James H.; and Owen, Hartley, 4,605,491, Cl. 208-161.000.
Harandi, Mohsen N., 4,605,493, Cl. 208-341.000.
Jennings, Alfred R., Jr., 4,605,061, Cl. 166-63.000.
Nowlin, Thomas E.; and Wagner, Klaus P., 4,605,638, Cl. 502-104.000.
Reimann, George J., 4,604,927, Cl. 83-55.000.

Mochimaru, Hideaki, to Ricoh Company, Ltd. Image forming apparatus with sized processing kits. 4,605,299, Cl. 355-3.00R.

Modin, Jimmie D. Hairstyling brush and a method for handling hairstyling brushes. 4,605,023, Cl. 132-85.000.

Moen, Bruce A.: *See*—
Rasmussen, David E.; and Moen, Bruce A., 4,605,839, Cl. 219-349.000.

Moffat, Allen J.; and Ours, Tom, to Airmatic-Allied, Inc. Solenoid operated valve. 4,605,196, Cl. 251-84.000.

Moilanen, Juhani; and Pietikainen, Markku, to Kajaani OY. Electrode system for voltametric measurements. 4,605,900, Cl. 324-439.000.

Molins, Limited: *See*—
Heybourn, Frank, 4,605,117, Cl. 198-493.000.

Molnar, Laszlo : *See*—
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, to Chlorine Engineers Corp., Ltd. Method for preparation of graft polymeric membranes. 4,605,685, Cl. 522-124.000.

Monarch Machine Tool Company, The: *See*—
Gusching, Nagle V.; and Daulton, Richard R., 4,604,810, Cl. 33-178.00E.

Mondon, Charles. Double glazing and a process for obtaining it. 4,604,840, Cl. 52-172.000.

Monot, Bernard, to Faiveley Entreprises. Device for releasing a rotational-locking actuating member. 4,605,108, Cl. 192-0.02R.

Monsanto Company: *See*—
Abell, Steven; and Peltier, Thomas L., 4,605,445, Cl. 106-236.000.
Fisher, Don E.; Fuqua, John W.; and Wilkie, Arnold E., 4,604,863, Cl. 57-352.000.

Schafer, David E.; and Czajkowski, Albert J., 4,605,431, Cl. 71-87.000.

Monsanto Europe S. A.: *See—*
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., 4,605,590, Cl. 428-295.000.

Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, to International Flavors & Fragrances, Inc. Methyl substituted pinyl oxopentenes, organoleptic uses thereof and process for preparing same. 4,605,793, Cl. 568-820.000.

Moore, Alfred Z. Assistance summoning system. 4,606,073, Cl. 455-89.000.

Moore, Michael J.; and Paxman, David H., to U.S. Philips Corporation. Semiconductor device with interdigitated electrodes. 4,605,949, Cl. 357-71.000.

Morano, Robert E.; Vogel, Victor J.; and Pawchak, Peter, to American Standard Inc. Transportation system having multiple direction cargo carrier door opener. 4,605,102, Cl. 186-37.000.

Moreau, Luc: *See—*
Lemarquand, Pierre; and Moreau, Luc, 4,605,918, Cl. 335-261.000.

Morgan, Charles R., to W. R. Grace & Co. UV and thermally curable, thermoplastic-containing compositions. 4,605,465, Cl. 156-273.300.

Morgan Construction Company: *See—*
Schaetzke, William R.; and DuFries, Ronald W., 4,604,883, Cl. 72-280.000.

Morgan, Craig D.: *See—*
Stephens, David C.; and Morgan, Craig D., 4,604,995, Cl. 128-69.000.

Morgan, Michael E., to Celanese Corporation. Titanium-glycol useful, as crosslinking agents, for polygalactomannans. 4,605,736, Cl. 536-114.000.

Morgan, Ted A.: *See—*
Silvis, H. Craig; and Morgan, Ted A., 4,605,789, Cl. 568-721.000.

Mori, Hiroyuki: *See—*
Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, 4,605,823, Cl. 179-18.0BC.

Mori, Katsumi: *See—*
Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, 4,605,566, Cl. 427-43.100.

Mori, Masaaki: *See—*
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl. 136-244.000.

Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, to Mitsubishi Petrochemical Co., Ltd. Process for the production of piperidine. 4,605,742, Cl. 546-184.000.

Moriguchi, Kouichi: *See—*
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.

Morikawa, Minoru: *See—*
Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.

Morimoto, Syogo: *See—*
Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.

Morishita, Akira; and Okamoto, Kyoichi, to Mitsubishi Denki Kabushiki Kaisha. Reduction gear device for a coaxial type starter. 4,604,907, Cl. 74-7.00E.

Moriwaki, Hiroshi; Yamamura, Yukio; and Fujikawa, Kazuhiko, to Matsushita Electric Works, Ltd. Vibratory massage device. 4,604,993, Cl. 128-24.200.

Morley, John G., to BCIRA. Curing binders for foundry moulds and cores. 4,605,052, Cl. 164-16.000.

Morris, Arthur J., to Camco, Incorporated. Redundant safety valve system and method. 4,605,070, Cl. 166-380.000.

Morris, Thomas E.: *See—*
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., 4,605,801, Cl. 570-253.000.

Morrissey, James. Head guide and batting helmet. 4,605,226, Cl. 273-26.00C.

Mortland, Max M.: *See—*
Pinnavaia, Thomas J.; Mortland, Max M.; and Boyd, Stephen A., 4,605,621, Cl. 435-177.000.

Morton Thiokol, Inc.: *See—*
Thompson, Arnold R., 4,605,104, Cl. 188-72.400.

Moser, Roman. Fly fishing junction leader. 4,604,821, Cl. 43-44.980.

Moser, Theo: *See—*
Krieger, Eberhard; and Moser, Theo, 4,605,393, Cl. 493-317.000.

Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza: *See—*
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Motomiya, Takehiko; and Ogawa, Shigeu, to Ohkura Electric Co., Ltd. Pattern-switching temperature control apparatus. 4,605,161, Cl. 236-15.0BC.

Motorola: *See—*
Wrathall, Robert S., 4,605,891, Cl. 323-313.000.

Motorola, Inc.: *See—*
Allensworth, Dana R., 4,605,987, Cl. 361-403.000.
Broughton, Christopher D., 4,605,908, Cl. 331-8.000.
Davis, Walter L., 4,606,076, Cl. 455-343.000.
Eastmond, Bruce C., 4,606,075, Cl. 455-234.000.
Ihle, John M., 4,605,903, Cl. 329-50.000.
McGinn, Michael, 4,605,965, Cl. 358-148.000.
Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., 4,605,947, Cl. 357-23.150.

Moulding, Thomas S., Jr.; and Ellis, Donald G. Medicine package, method of opening the package, and machine for performing the method. 4,604,847, Cl. 53-75.000.

Mouzin, Gilbert: *See—*
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.

Mowdood, Syed K., to Goodyear Tire & Rubber Company, The. Rubber-metal adhesion promoters. 4,605,693, Cl. 524-239.000.

Mowdood, Syed K.: *See—*
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.

Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., to Ciba-Geigy Corporation. Unsaturated polysiloxanes and polymers thereof. 4,605,712, Cl. 525-474.000.

Muirhead, Allen D., to Unicell Limited. Condensation prevention apparatus. 4,605,852, Cl. 250-231.00R.

Mukai, Takuma: *See—*
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Mulas, Piero: *See—*
Bonissone, Giancarlo; and Mulas, Piero, 4,605,199, Cl. 251-171.000.

Muller, Johann; Trieschmann, Christa; and Preiner, Gerhard, to Wacker-Chemie GmbH. Crosslinkable organopolysiloxanes and a method for preparing the crosslinkable organopolysiloxanes. 4,605,567, Cl. 427-54.100.

Muller, Willi: *See—*
Hoffacker, Gerd; and Muller, Willi, 4,605,474, Cl. 204-44.000.

Mundus, Friedhelm: *See—*
Achelpohl, Fritz; Mundus, Friedhelm; and Ebmeyer, Wilfried, 4,605,392, Cl. 493-196.000.

Munnion, Derek, to Link Electronics Limited. Mounting arrangement for a camera viewfinder. 4,605,296, Cl. 354-223.000.

Munteanu, Marina A.: *See—*
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,605,165, Cl. 239-6.000.

Murai, Atsuya: *See—*
Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, 4,605,823, Cl. 179-18.0BC.

Murakoshi, Hisaya: *See—*
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.

Murasaki, Motoshi: *See—*
Kumano, Shinji; and Murasaki, Motoshi, 4,604,937, Cl. 84-435.000.

Murata, Hitoshi: *See—*
Kitamura, Kengo; and Murata, Hitoshi, 4,604,797, Cl. 29-783.000.

Murata Kikai Kabushiki Kaisha: *See—*
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, 4,605,177, Cl. 242-35.50A.

Murata Manufacturing Co., Ltd.: *See—*
Ogawa, Toshio; and Kittaka, Toshihiko, 4,605,876, Cl. 310-358.000.

Murayama, Yoshimasa: *See—*
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.

Murray, Michael A.: *See—*
Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., 4,605,001, Cl. 128-305.000.

Musso, Pietro, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter with a device for zero positioning of a rotary character-carrying device. 4,605,324, Cl. 400-144.200.

Muto, Naoki: *See—*
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, 4,605,615, Cl. 435-16.000.

Mutoh, Yoshiyuki: *See—*
Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.

Myers, Lawrence R.: *See—*
Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., 4,604,870, Cl. 60-551.000.

Myers, Melvin K.; and Pospisil, Frank, to Reynolds Industries, Inc. High voltage electrical connector. 4,605,272, Cl. 339-60.00M.

Myzska, Edward M.: *See—*
Taschner, Edwin C.; and Myzska, Edward M., 4,604,896, Cl. 73-583.000.

Nabisco Brands, Inc.: *See—*
Horwath, Robert O.; and Irbe, Robert M., 4,605,619, Cl. 435-94.000.

Nadai, Bela: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.

Nagai, Haruhiko: *See—*
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.

Nagano, Satoshi; and Sakai, Masanori, to Tsubakimoto Chain Company. Sheet metal pulley for toothed belts and manufacturing process thereof. 4,605,388, Cl. 474-152.000.

Nagao, Toshiaki; and Shiho, Toshio, to Omron Tateisi Electronics Co. Data transmission system. 4,606,029, Cl. 371-69.000.

Nagaoka, Kazunobu: *See—*
Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, 4,605,032, Cl. 137-44.000.

Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, to Nitto Boseki Co., Ltd. Method for measuring plasmin. 4,605,614, Cl. 435-13.000.

Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, to Japan Tobacco Inc. Packing container forming apparatus. 4,605,390, Cl. 493-84.000.

Nagata, Wataru: *See*—
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.

Nagl, Michael: *See*—
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Nagle, Gordon A.: *See*—
Barnoff, Robert M.; and Nagle, Gordon A., 4,604,841, Cl. 52-174.000.

Nagler, Werner: *See*—
Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, 4,605,824, Cl. 179-18.0HB.

Naisuler, Alan C., to Beckman Instruments, Inc. Prescaling device and method. 4,605,920, Cl. 340-347.0NT.

Naito, Youichiro: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Nakajima, Yoshiaki: *See*—
Ueki, Junzo; and Nakajima, Yoshiaki, 4,605,327, Cl. 400-208.000.

Nakama, Hiroshi: *See*—
Kawanami, Shumpei; and Nakama, Hiroshi, 4,604,813, Cl. 33-529.000.

Nakamura, Hiroshi: *See*—
Sasaki, Susumu; and Nakamura, Hiroshi, 4,606,048, Cl. 375-39.000.

Nakamura, Masao, to Taiho Kogyo Co., Ltd. Method of pressure bonding composite materials. 4,605,458, Cl. 156-164.000.

Nakamura, Masaru; Nitsuta, Kouichi; and Ozeki, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Composite optical semiconductor device. 4,605,943, Cl. 357-17.000.

Nakamura, Takashi; and Takahashi, Kenji, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing method. 4,605,861, Cl. 250-484.100.

Nakamura, Tooru. Drive assembly for cleaner for wire-screen or felt-blanket belt of papermaking apparatus. 4,605,472, Cl. 162-277.000.

Nakamura, Yoshio: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.

Nakanishi, Kazuo: *See*—
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, 4,605,177, Cl. 242-35.50A.

Nakano, Walter S.: *See*—
Halford, Wayne R.; and Nakano, Walter S., 4,605,230, Cl. 273-129.0AP.

Nalco Chemical Company: *See*—
Jansma, Roger H.; and Sandberg, Karen R., 4,605,718, Cl. 526-240.000.

Narda Mircowave Corporation, The: *See*—
Aslan, Edward E., 4,605,905, Cl. 330-9.000.

Narita, Yoshinori; and Makino, Hirohisa, to NGK Spark Plug Co., Ltd. Method of producing a cylinder head with a port liner. 4,604,779, Cl. 29-156.4WL.

Naslund, Jan I. Cell sampling apparatus. 4,605,011, Cl. 128-752.000.

Naster, Ronald J.; Windyka, John A.; and Wolfe, Allen R., to General Electric Company. Continuously variable phase shifting element comprised of interdigitated electrode MESFET. 4,605,912, Cl. 333-164.000.

Nath, Prem, to Energy Conversion Devices, Inc. Method of depositing a highly conductive, highly transmissive film. 4,605,565, Cl. 427-39.000.

National Carbide Tool, Inc.: *See*—
Jodock, Marvin S.; and Maternus, Fred, 4,605,347, Cl. 408-224.000.

Natori, Takashi: *See*—
Kamiura, Hirofumi; and Natori, Takashi, 4,605,527, Cl. 264-137.000.

Nauchno-Issledovatelsky Institut Prikladnykh Fizicheskikh Problem Imeni A.N. Sevchenko: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., 4,605,520, Cl. 558-414.000.

Nauchno-Issledovatelsky Institut Prikladnykh Problem Imeni A.N. Sevchenko: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Nautical Electronic Laboratories Limited: *See*—
Covill, Dennis H., 4,605,910, Cl. 332-9.00R.

Navish, Francis W., Jr.: *See*—
Mendelsohn, Morris A.; and Navish, Francis W., Jr., 4,604,940, Cl. 89-1.816.

Naydowski, Reinhard: *See*—
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,605,178. Cl. 242-55.000.

NCR Corporation: *See*—
Ferrante, Ronald A., 4,605,606, Cl. 430-2.000.
Mitchell, Curt E., 4,605,471, Cl. 156-645.000.

Neary, Ralph E.; and Hull, Scott A., to Schlage Lock Company. Cylindrical lock. 4,604,879, Cl. 70-224.000.

NEC Corporation: *See*—
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, 4,605,917, Cl. 335-128.000.
Kanemasa, Akira, 4,605,826, Cl. 179-170.200.
Kusano, Mitsuhiro, 4,605,935, Cl. 343-914.000.
Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, 4,605,566, Cl. 427-43.100.
Otani, Susumu, 4,606,027, Cl. 371-43.000.
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Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappellijk Onderzoek: *See*—
Van Elven, Aris; and Overmars, Henricus G. J., 4,605,504, Cl. 210-656.000.

Needham, Robert J.: *See*—
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Neef, James D.: *See*—
Kennedy, Robert E.; and Neef, James D., 4,604,938, Cl. 89-1.800.

Nelson, Walter H.: *See*—
Sloan, Gary W.; and Nelson, Walter H., 4,605,051, Cl. 157-13.000.

Neunherz, Robert K.: *See*—
Grebel, Robert E.; Neunherz, Robert K.; and McGrath, David W., 4,604,956, Cl. 108-147.000.

New Holland Inc.: *See*—
Hurlburt, Joseph C., 4,605,259, Cl. 296-190.000.

New Jersey Machine Inc.: *See*—
Voltmer, Helmut; and Schwenzer, Alfred F., 4,605,459, Cl. 156-215.000.

New York University: *See*—
Dunham, Philip B.; and Weissmann, Gerald, 4,605,618, Cl. 435-29.000.

Newbold, F. E. Dixon: *See*—
Levine, Edward H.; and Newbold, F. E. Dixon, 4,605,289, Cl. 350-606.000.

Newman, James P.: *See*—
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.

NGK Spark Plug Co., Ltd.: *See*—
Narita, Yoshinori; and Makino, Hirohisa, 4,604,779, Cl. 29-156.4WL.

Nicolas, Michel J. R.; and Sebilet, Bruno R., to Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Spread spectrum coding method and apparatus. 4,606,039, Cl. 375-1.000.

Niederstatter, Walter: *See*—
Strqszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, 4,605,480, Cl. 204-211.000.

Nienhuis, James H.; and Schreiner, Charles P., to Herman Miller, Inc. Anti-static grounding arrangement for work environment system. 4,605,988, Cl. 361-429.000.

Nihashi, Tokuaki: *See*—
Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, 4,605,600, Cl. 428-689.000.

Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, to Hamamatsu Photonics Kabushiki Kaisha. Transparent GaAs photoelectric layer. 4,605,600, Cl. 428-689.000.

Nikkel, Ronnie D.; and L'Esperance, Paul M., to Phillips Petroleum Company. Collector means for solar energy collecting system. 4,604,990, Cl. 126-418.000.

Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., to Celanese Corporation. Optical data storage medium having organometallic chromophore/polymer coordinated information layer. 4,605,607, Cl. 430-17.000.

Nilsson, Goran A.; Edstrom, Kjell E. E.; and Wiklund, Henry W. Device in needle hammers. 4,605,073, Cl. 173-51.000.

Ninane, Leon; Breton, Claude; and Guerdon, Constant, to Solvay & Cie. (Societe Anonyme). Process and installation for the production of an organic solution of a water-insoluble organic base. 4,605,771, Cl. 564-497.000.

Ninomiya, Naoyoshi: *See*—
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.

Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, to Sumitomo Chemical Company, Ltd. Tensile tester. 4,605,857, Cl. 250-372.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kumano, Shinji; and Murasaki, Motoshi, 4,604,937, Cl. 84-435.000.

Nippon Kogaku K.K.: *See*—
Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, 4,605,955, Cl. 358-29.000.

Nippon Light Metal Company Limited: *See*—
Ohno, Atsumi, 4,605,056, Cl. 164-490.000.

Nippon Notion Kogyo Co., Ltd.: *See*—
Ikehara, Ichiro, 4,605,150, Cl. 227-18.000.

Nippon Piston Ring Co., Ltd.: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,605,695, Cl. 524-424.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, 4,605,387, Cl. 474-112.000.

Nippon Valqua Kogyo Kabushiki Kaisha: *See*—
Kamiura, Hirofumi; and Natori, Takashi, 4,605,527, Cl. 264-137.000.

Nippon Zeon Co., Ltd.: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,605,625, Cl. 435-280.000.
Nippondenso Co., Ltd.: *See—*
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl. 136-244.000.
Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, 4,604,869, Cl. 60-311.000.
Nishijima, Hideo: *See—*
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.
Nishijima, Tamotsu; and Fujino, Toshihiro, to Yazaki Corporation. Forming apparatus for production of stranded conductor. 4,604,882, Cl. 72-71.000.
Nishikata, Yasuhiro: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.
Nishimura, Yasuyuki: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.
Nishizawa, Susumu: *See—*
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.
Nishizawa, Toshiaki: *See—*
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl. 136-244.000.
Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa, 4,604,973, Cl. 123-41.210.
Hayashi, Yoshimasa, 4,605,163, Cl. 237-2.00A.
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,605,164, Cl. 237-2.00A.
Kitamura, Kengo; and Murata, Hitoshi, 4,604,797, Cl. 29-783.000.
Ohashi, Toshio; and Yamamoto, Yasushi, 4,604,873, Cl. 62-158.000.
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.
Watanabe, Takeaki, 4,604,946, Cl. 98-2.090.
Watanabe, Takeaki, 4,604,974, Cl. 123-41.570.
Nitsuta, Kouichi: *See—*
Nakamura, Masaru; Nitsuta, Kouichi; and Ozeki, Takeshi, 4,605,943, Cl. 357-17.000.
Nitto Boseki Co., Ltd.: *See—*
Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, 4,605,701, Cl. 525-107.000.
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.
Nitto Chemical Industry Co., Ltd.: *See—*
Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, 4,605,505, Cl. 252-8.514.
Nitto Electric Industrial Co., Ltd.: *See—*
Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., 4,605,670, Cl. 514-619.000.
Ushiyama, Keiichi; and Ichinose, Hisashi, 4,605,548, Cl. 424-15.000.
NL Industries, Inc.: *See—*
Barr, John D.; and Lamb, Haydn R., 4,605,157, Cl. 228-132.000.
Meador, Richard A., 4,605,268, Cl. 339-16.00C.
Noaki, Yasuhide: *See—*
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Noback, Charles V.: *See—*
Dilanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.
Nobel Kemi AB: *See—*
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Noguchi, Hiroshi: *See—*
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.
Nolin, Rosemary D. Comb for dispensing treatment solution to hair. 4,605,026, Cl. 132-112.000.
Nomoto, Yoshitaka; and Matsuoka, Tsutomu, to Mazda Motor Corporation. Cleaner control for diesel engine exhaust gases. 4,604,868, Cl. 60-286.000.
Nomura, Yutaka: *See—*
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.
Nordiskafilt AB: *See—*
Johansson, Arne B., 4,605,585, Cl. 428-224.000.
Norsworthy, John P.: *See—*
Dansky, Allan H.; and Norsworthy, John P., 4,605,870, Cl. 307-443.000.
North American Philips Corporation: *See—*
Stanton, Douglas A., 4,605,283, Cl. 350-127.000.
North American Products Corp.: *See—*
Lesher, Ernest G.; and Mieras, Cornelius E., 4,604,933, Cl. 83-851.000.
North American Specialties Corporation: *See—*
Seidler, Jack, 4,605,278, Cl. 339-275.00B.
North Carolina State University: *See—*
Christensen, Vern L., 4,604,968, Cl. 119-1.000.
Northern Telecom Limited: *See—*
Baxter, Gordon D., 4,605,525, Cl. 264-40.500.
Conn, David R., 4,605,866, Cl. 307-296.00R.
McGettigan, Philip A.; and Roberge, Jean M., 4,604,862, Cl. 57-26-.000.
Van Den Brekel, Jacques; and Ho, Thomas K. Y., 4,605,153, Cl. 228-56.300.
Norton Christensen, Inc.: *See—*
Radford, Steven R.; and Davis, J. Stanley, 4,605,075, Cl. 175-58.000.
Norton Company: *See—*
Rossi, Giulio A., 4,605,631, Cl. 501-1.000.
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, to Toyo Boseki Kabushiki Kaisha. Thermoplastic resin film laminate and production thereof. 4,605,591, Cl. 428-332.000.
Nowack, G. P.; and Johnson, M. M., to Phillips Petroleum Company. Process for removal of arsenic from gases. 4,605,812, Cl. 585-845.000.
Nowlin, Thomas E.; and Wagner, Klaus P., to Mobil Oil Corporation. Highly active catalyst composition for polymerizing alpha-olefins. 4,605,638, Cl. 502-104.000.
Nozaki, Shinya: *See—*
Kobayashi, Tadashi; Nozaki, Shinya; and Yamada, Keiichi, 4,604,979, Cl. 123-449.000.
Nuclear Research Corp.: *See—*
Dilanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.
Nunamaker, David M.; and Richardson, Dean W. External skeletal fixator. 4,604,996, Cl. 128-87.00R.
Nyzell, Jan-Erik, to Affarsverket FFV. Training means for a weapon. 4,605,372, Cl. 434-16.000.
O.C.C. Company Limited: *See—*
Ohno, Atsumi, 4,605,056, Cl. 164-490.000.
O.K. Industries Inc.: *See—*
Tsipenyuk, Pyotr; and Kober, Marvin, 4,604,796, Cl. 29-764.000.
Oba, Takeo: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.
Obana, Satoshi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Latex for immunoserological tests and a method for the production of the same. 4,605,686, Cl. 523-105.000.
Obrecht, Werner, to GAO Gesellschaft fur Automation und Organisation mbH. Method of contacting the galvanic contacts of an identification card with an embedded IC-module. 4,605,896, Cl. 324-158.00F.
Occidental Chemical Corporation: *See—*
Eastman, David W.; and Walker, Leigh E., 4,605,704, Cl. 525-193.000.
Occidental Oil Shale, Inc.: *See—*
Madgavkar, Ajay, 4,605,489, Cl. 208-87.000.
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus. 4,605,974, Cl. 360-62.000.
Ochi, Kenji: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,605,706, Cl. 525-340.000.
Oda, Robert: *See—*
Hurd, Bruce; and Oda, Robert, 4,605,227, Cl. 273-54.00B.
Odam, Societe Anonyme: *See—*
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, 4,605,012, Cl. 128-804.000.
O'Donovan, Wendy O.: *See—*
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., 4,604,824, Cl. 47-1.00A.
Oei, Howard H.: *See—*
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., 4,605,665, Cl. 514-431.000.
Ogawa, Hiroshi; and Tamai, Yasuo, to Fuji Photo Film Co.,Ltd. Magnetic recording medium. 4,605,597, Cl. 428-522.000.
Ogawa, Mutsuo, to Ricoh Company, Ltd. Photosensor and output control therefor. 4,605,848, Cl. 250-205.000.
Ogawa, Naoki: *See—*
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,605,164, Cl. 237-2.00A.
Ogawa, Shigeu: *See—*
Motomiya, Takehiko; and Ogawa, Shigeu, 4,605,161, Cl. 236-15.0BC.
Ogawa, Toshio; and Kittaka, Toshihiko, to Murata Manufacturing Co., Ltd. Piezoelectric ceramic energy trapping electronic device. 4,605,876, Cl. 310-358.000.
Ogi, Hisao, to Ide Idustries Limited. Method of transferring a retroreflective pattern onto a fabric. 4,605,461, Cl. 156-233.000.
Ogiwara, Osao, to Akebono Brake Industry Co., Ltd. Brake system. 4,605,105, Cl. 188-251.00M.
Ogle, Dennis F.; Clark, Charles A., Jr.; and Aires, Ramon H., to Vernitron Corporation. Synchro power amplifier and control circuit for automatically tuning an inductive load. 4,605,890, Cl. 323-209.000.
Oglevee Associates, Inc.: *See—*
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., 4,604,824, Cl. 47-1.00A.
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., to Oglevee Associates, Inc. Lily products. 4,604,824, Cl. 47-1.00A.
Oguri, Yukio: *See—*
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.
Ohashi, Toshio; and Yamamoto, Yasushi, to Nissan Motor Co., Ltd. Air conditioning unit for automobiles. 4,604,873, Cl. 62-158.000.
Ohkawa, Michihiro: *See—*
Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, 4,605,032, Cl. 137-44.000.

Ohkura Electric Co., Ltd.: *See*—
Motomiya, Takehiko; and Ogawa, Shigeu, 4,605,161, Cl. 236-15.0BC.

Ohnishi, Masanori, to Diesel Kiki Co., Ltd. Centrifugal governor for internal combustion engines. 4,604,977, Cl. 123-365.000.

Ohno, Atsumi, to Nippon Light Metal Company Limited; and O.C.C. Company Limited. Process and apparatus for the horizontal continuous casting of a metal molding. 4,605,056, Cl. 164-490.000.

Ohno, Masayuki; and Maeda, Kazuo, to Kabushiki Kaisha Kito. Hoist. 4,605,111, Cl. 192-16.000.

Ohno, Shigeru; and Kishimoto, Shinzo, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic material. 4,605,611, Cl. 430-393.000.

Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, to Ricoh Company, Ltd. Single lens reflex camera. 4,605,295, Cl. 354-154.000.

Ohta, Masashi: *See*—
Niigaki, Minoru; Nihashi, Tc.uaki; and Ohta, Masashi, 4,605,600, Cl. 428-689.000.

Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, to Kawasaki Steel Corporation. Duplex stainless steel seamless pipe and a method for producing the same. 4,604,887, Cl. 72-368.000.

Oida, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable frequency divider. 4,606,059, Cl. 377-47.000.

Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, to Agency of Industrial Science & Technology; Kyoto Prefectural Government; and Hosoya Fireworks Co., Ltd. Lithotriptor. 4,605,003, Cl. 128-328.000.

Okabe, Takeshi: *See*—
Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, 4,604,833, Cl. 51-165.800.

Okamoto, Kyoichi: *See*—
Morishita, Akira; and Okamoto, Kyoichi, 4,604,907, Cl. 74-7.00E.

Okamoto, Masaru: *See*—
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, 4,605,727, Cl. 528-191.000.

Okamoto, Yuji: *See*—
Sakakibara, Yozo; and Okamoto, Yuji, 4,605,260, Cl. 296-201.000.

Okawa, Takashi: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,605,796, Cl. 568-902.000.

Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, to Mitsubishi Paper Mills, Ltd. Image receiving material with low calcium gelatin. 4,605,609, Cl. 430-232.000.

Okikawa, Shinji: *See*—
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.

Okubo, Akira: *See*—
Otani, Junji; Okubo, Akira; and Iwashita, Kanau, 4,604,865, Cl. 60-293.000.

Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, to Nippon Seiko Kabushiki Kaisha. Tensioner. 4,605,387, Cl. 474-112.000.

Okuda, Chikaaki: *See*—
Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, 4,605,168, Cl. 239-112.000.

Okumura Engineering Works Co., Ltd.: *See*—
Miyazaki, Tadao, 4,605,201, Cl. 251-305.000.

Olander, Donald E.; and Woods, Harold J., to Hi-Shear Corporation. Void-sensing fuze. 4,604,953, Cl. 102-272.000.

Olin Corporation: *See*—
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.
Knorr, David B.; and Breedis, John F., 4,605,532, Cl. 420-472.000.

Olson, Arthur A., Jr.: *See*—
Hahn, Norbert; and Olson, Arthur A., Jr., 4,605,353, Cl. 414-401.000.

Olson, John E., to Cascade Corporation. Load clamp having motor-powered screw-type clamping actuator capable of accurate positioning and high clamping force. 4,605,255, Cl. 294-67.330.

Olympus Optical Company, Ltd.: *See*—
Sato, Ken, 4,604,992, Cl. 128-6.000.

Omark Industries, Inc.: *See*—
Doiron, Gerald J., 4,604,932, Cl. 83-830.000.

Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, to Onoda Construction Materials Co., Ltd. Process for inhibiting corrosion of steel materials built in inorganic materials. 4,605,572, Cl. 427-403.000.

Ometz, Pierre H. M.; and Labrador, Jacques A. L., to Societe Nationale Industrielle Aerospatiale. Process and device for detecting foreign bodies in a liquid. 4,605,851, Cl. 250-223.00B.

Omron Tateisi Electronics Co.: *See*—
Nagao, Toshiaki; and Shiho, Toshio, 4,606,029, Cl. 371-69.000.

Onishi, Tetsuo; and Sugiyama, Yoshihide, to Duplo Seiko Corp.; and Duplo Manufacturing Corp. Illegal-sheet-material detection apparatus in sheet material manufacturing machine. 4,605,926, Cl. 340-825.300.

Ono, Taizo: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Onoda Construction Materials Co., Ltd.: *See*—
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.

Optical Storage International: *See*—
Verboom, Johannes J.; and Bracht, Roger R., 4,606,016, Cl. 369-54.000.

Orgo-Thermit Inc.: *See*—
Fricke, Hans D., 4,605,053, Cl. 164-54.000.

Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., to Armour Pharmaceutical Company. Des-4-leucine-calcitonin. 4,605,514, Cl. 530-307.000.

Orlowski, Ronald C.; and Stahl, Glenn L., to Armour Pharmaceutical Company. Calcitonin-(1-23)-peptide amide. 4,605,515, Cl. 530-307.000.

Orphanides, Gus G., to Air Products and Chemicals, Inc. Vinyl acetate-ethylene copolymer binder emulsions for medical-surgical nonwoven fabrics. 4,605,589, Cl. 428-290.000.

Orthofix S.r.l.: *See*—
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.

Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., to Exxon Production Research Co. Vessel mooring system. 4,604,961, Cl. 114-230.000.

Ossowski, Manfred: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Osyatinsky, Saul G.: *See*—
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Otani, Junji; Okubo, Akira; and Iwashita, Kanau, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust system air introduction device. 4,604,865, Cl. 60-293.000.

Otani, Susumu, to NEC Corporation. Error correction apparatus using a Viterbi decoder. 4,606,027, Cl. 371-43.000.

Otomo, Nobuyuki: *See*—
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Otrusina, Edward C. Quick-release connector with teardrop-shaped configuration. 4,605,335, Cl. 403-348.000.

Ott, Renaud P. L.; and Jalabert, Georges E. P., to Societe Anonyme Dite "Etablissements Paturle" Lost-form concrete falsework. 4,604,843, Cl. 52-426.000.

Otto Zollinger, Inc.: *See*—
Zollinger, Otto, 4,605,182, Cl. 242-149.000.

Ours, Tom: *See*—
Moffat, Allen J.; and Ours, Tom, 4,605,196, Cl. 251-84.000.

Outboard Marine Corporation: *See*—
Ferguson, Arthur R., 4,605,375, Cl. 440-1.000.
Wenstadt, Thomas D., 4,605,377, Cl. 440-61.000.

Outokumpu Oy: *See*—
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.

Overbeck GmbH & Co.: *See*—
Becker, Gert, 4,604,852, Cl. 53-444.000.

Overmars, Henricus G. J.: *See*—
Van Elven, Aris; and Overmars, Henricus G. J., 4,605,504, Cl. 210-656.000.

Overton, Bradley T.: *See*—
Verrando, Marcel G.; Duich, Michael B.; and Overton, Bradley T., 4,605,425, Cl. 55-20.000.

Ovshinsky, Stanford R.; and Izu, Masatsugu, to Energy Conversion Devices, Inc. Amorphous semiconductors equivalent to crystalline semiconductors. 4,605,941, Cl. 357-2.000.

Owen, Hartley: *See*—
Haddad, James H.; and Owen, Hartley, 4,605,491, Cl. 208-161.000.

Owens-Illinois, Inc.: *See*—
Barton, Harold A., 4,605,158, Cl. 229-15.000.
Jabarin, Saleh A., 4,605,576, Cl. 428-35.000.
Thomas, Ian M.; and Tillman, James J., 4,605,450, Cl. 148-188.000.

Owens, Kenneth E.; and Hatch, Robert A., to Minnesota Mining and Manufacturing Company. Ceramic articles having a nonporous core and porous outer layer. 4,605,594, Cl. 428-373.000.

Ozeki, Takeshi: *See*—
Nakamura, Masaru; Nitsuta, Kouichi; and Ozeki, Takeshi, 4,605,943, Cl. 357-17.000.

P. F. Medicament: *See*—
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.

Pace, Incorporated: *See*—
Fridman, Robert, 4,605,152, Cl. 228-6.200.

Pacifici, James G.: *See*—
Eubanks, Robert J. I.; and Pacifici, James G., 4,605,521, Cl. 558-313.000.
Eubanks, Robert J. I.; and Pacifici, James G., 4,605,784, Cl. 568-614.000.

Page, John F.; and Schaller, Helmut, to Fender Musical Instruments Corporation. Snap-in vibrato arm. 4,604,936, Cl. 84-313.000.

Page, Michael J., to Laporte Industries Limited. Heat exchanger. 4,605,059, Cl. 165-163.000.

Pall Corporation: *See*—
Verrando, Marcel G.; Duich, Michael B.; and Overton, Bradley T., 4,605,425, Cl. 55-20.000.

Palosi, Eva: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Pannell, Richard B.: *See—*
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.

Panush, Sol, to Inmont Corporation. Multilayer automotive paint system. 4,605,687, Cl. 523-171.000.

Papaiz of Canada Limited: *See—*
Todd, Terry J. M.; and Vulakovic, Josip, 4,604,878, Cl. 70-139.000.

Papenfuhs, Theodor: *See—*
Arndt, Otto; and Papenfuhs, Theodor, 4,605,767, Cl. 564-412.000.

Papst, Gero: *See—*
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Paquette, Susan Z.; and Falaas, Dennis O., to Minnesota Mining and Manufacturing Company. Composite decorative article. 4,605,592, Cl. 428-334.000.

Park, Alan J. C. Domestic electrical tester. 4,605,895, Cl. 324-133.000.

Park, Chung P., to Dow Chemical Company, The. Lightly crosslinked polyethylene polystyrene blend foams and process for making. 4,605,682 Cl. 521-81.000.

Parker, Steven E. Method and apparatus for retaining articles on packframes. 4,605,143, Cl. 224-214.000.

Parla, Ralph L.: *See—*
Armeno, Michael; and Parla, Ralph L., 4,605,579, Cl. 428-66.000.

Paseman, Richard R. Tube cleaning apparatus. 4,605,028, Cl. 134-167.00C.

Passalacqua, Peter. Dry pressed powder stick composition and vehicle therefor. 4,605,553, Cl. 424-59.000.

Pastor, Antonio C., to Hughes Aircraft Company. Shaped crystal fiber growth method. 4,605,468, Cl. 156-608.000.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Krieg, Rudolf, 4,605,994, Cl. 362-202.000.

Paul, Heinz: *See—*
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Paul Wurth S.A.: *See—*
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, 4,605,342, Cl. 406-129.000.

Pauley, Reginald W., to Ingersoll-Rand Company. Impulse tool having shut off system. 4,604,943, Cl. 91-59.000.

Paulsson, Karin M.: *See—*
Bjornberg, Arne; Martensson, Ulf S.; and Paulsson, Karin M., 4,605,544, Cl. 423-508.000.

Pavan, Mario. Apparatus for producing shaped dough products. 4,604,947, Cl. 99-353.000.

Pavel, Laszlo, to Reliance Electric Company. Modular encapsulated cross-connect terminal unit. 4,605,275, Cl. 339-119.00R.

Pawchak, Peter: *See—*
Morano, Robert E.; Vogel, Victor J.; and Pawchak, Peter, 4,605,102, Cl. 186-37.000.

Paxman, David H.: *See—*
Moore, Michael J.; and Paxman, David H., 4,605,949, Cl. 357-71.000.

Payne, William J., to Crown Creative Industries. Knock down lamp shade. 4,605,996, Cl. 362-352.000.

Pcolinsky, Michael P., Jr. Antistatic polyurethane foam. 4,605,684, Cl. 521-107.000.

PCUK Products Chimiques Ugine Kuhlmann: *See—*
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.

Pearson, Norman R.; and Kleschick, William A., to Dow Chemical Company, The. 1,2,4-triazolo[1,5-a]-1,3,5-triazine-2-sulfonamides and compositions and methods of controlling undesired vegetation. 4,605,433, Cl. 71-93.000.

Peelen, Frank C., to Akzo NV. Liquid, curable coating composition based on a hydroxyl groups-containing addition polymer as binder. 4,605,719, Cl. 526-282.000.

Peffer, John R.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,605,724, Cl. 528-73.000.

PEG Perego Pines Deutschland GmbH: *See—*
Glaser, Dieter, 4,605,243, Cl. 280-642.000.

Pelczynski, John F., to Hydro-Thermal Corp. Powered drum opener with cutter wheel. 4,604,806, Cl. 30-417.000.

Pellon, Joseph J.: *See—*
Witheford, John M.; Pellon, Joseph J.; and Colman, William P., 4,605,689, Cl. 523-313.000.

Peltier, Thomas L.: *See—*
Abell, Steven; and Peltier, Thomas L., 4,605,445, Cl. 106-236.000.

Penney, Bruce J., to Tektronix, Inc. Peak-to-peak detection apparatus. 4,605,868, Cl. 307-351.000.

Penrice, Thomas W.; and Bost, James, to Teledyne Industries, Incorporated. High density tungsten alloy sheet. 4,605,599, Cl. 428-665.000.

Perl, Julius: *See—*
Beg, Mirza R.; and Perl, Julius, 4,606,965, Cl. 382-18.000.

Perloff, Ronald S., to Burroughs Corporation. Method of encoding and serially transmitting self-clocking data and control characters. 4,606,056, Cl. 375-110.000.

Personal Products Company: *See—*
Iskra, Michael J., 4,605,402, Cl. 604-368.000.

Persyk, Dennis E.; and Ritter, Keith A., to Siemens Gammasonics, Inc. Method and device for stabilizing photomultiplier tubes of a radiation image device against drift. 4,605,856, Cl. 250-363.00S.

Peters, Robert M.; Schnurmann, Henri D.; and Vidunas, Louis J., to International Business Machines Corp. Automatically testing a plurality of memory arrays on selected memory array testers. 4,606,025, Cl. 371-20.000.

Petersen, Bruce L.: *See—*
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.

Peterson, Carl W. Culvert. 4,605,338, Cl. 405-124.000.

Peterson, Dale R.: *See—*
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.

Petitcollin, Jean-Marc; and Taworski, Andre , to Saint-Gobain Vitrage. Process and device for production of plastic sheets of good optical quality. 4,605,528, Cl. 264-216.000.

Petitjean, Gilles, to Du Pont de Nemours, E. I., and Company. Hydrostatic film support. 4,605,146, Cl. 226-97.000.

Petrov, Lazar O.: *See—*
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.

Peuser, Sieghart: *See—*
Hankel, Rainer; Pham, Minh-Chanh; and Peuser, Sieghart, 4,605,308, Cl. 356-373.000.

Peychev, Rumen P.: *See—*
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.

Pfaff, Eberhard P.: *See—*
Schaller, Heinz E.; and Pfaff, Eberhard P., 4,605,512, Cl. 260-112.005.

Pfaff Industriemaschinen GmbH: *See—*
Busch, Edgar; and Albrecht, Ernst, 4,604,958, Cl. 112-443.000.
Emrich, Reinhard; and Appel, Kurt, 4,605,578, Cl. 428-57.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,605,624, Cl. 435-253.000.

Pfleiderer, Hans-Joerg; and Knauer, Karl, to Siemens Aktiengesellschaft. Transversal filter having an analog shift register. 4,605,913, Cl. 333-166.000.

Pfohl, Frank W.: *See—*
Hellmer, Ernest W.; and Pfohl, Frank W., 4,605,368, Cl. 425-195.000.

Pham, Minh-Chanh: *See—*
Hankel, Rainer; Pham, Minh-Chanh; and Peuser, Sieghart, 4,605,308, Cl. 356-373.000.

Phillips Petroleum Company: *See—*
Banks, Robert L., 4,605,810, Cl. 585-646.000.
Drake, Charles A., 4,605,797, Cl. 570-101.000.
Elliott, David J., 4,605,775, Cl. 568-387.000.
Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,604,990, Cl. 126-418.000.
Nowack, G. P.; and Johnson, M. M., 4,605,812, Cl. 585-845.000.
Senatore, Guy, 4,605,733, Cl. 528-388.000.

Phillips, William V.: *See—*
Kiefer, Judy E.; Phillips, William V.; and Woodruff, Thomas E., 4,605,763, Cl. 562-487.000.

Pierantozzi, Ronald: *See—*
Dyer, Paul N.; and Pierantozzi, Ronald, 4,605,639, Cl. 502-331.000.

Pietikainen, Markku: *See—*
Moilanen, Juhani; and Pietikainen, Markku, 4,605,900, Cl. 324-439.000.

Pike, Louis D., to Pike Machine Products Company. Locking arm lamp swivel. 4,605,995, Cl. 362-287.000.

Pike Machine Products Company: *See—*
Pike, Louis D., 4,605,995, Cl. 362-287.000.

Pike, Robert W., Jr.: *See—*
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., 4,605,406, Cl. 623-1.000.

Pinkham, Eleanor T.: *See—*
Bowman, J. Robert; and Pinkham, Eleanor T., 4,604,759, Cl. 2-81.000.

Pinnavaia, Thomas J.; Mortland, Max M.; and Boyd, Stephen A., to Michigan State University. Clay-enzyme complexes and method for preparing same. 4,605,621, Cl. 435-177.000.

Pinney, Robert V. B., Jr.: *See—*
Habitzreiter, Richard K.; Pinney, Robert V. B., Jr.; and Woolston, Mark S., 4,606,068, Cl. 382-56.000.

Pintchovski, Fabio: *See—*
Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., 4,605,947, Cl. 357-23.150.

Pioch, Richard P.: *See—*
Hirsch, Kenneth S.; and Pioch, Richard P., 4,605,661, Cl. 514-400.000.

Pires, H. George. Digital video special effects generator. 4,605,967, Cl. 358-183.000.

Pitney Bowes Inc.: *See—*
Daniels, Edward P., 4,606,003, Cl. 364-200.000.
Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., 4,605,937, Cl. 346-76.0PH.

Hubbard, David W.; and Seestrom, Frank E., 4,605,939, Cl. 346-140.00R.
Sette, Paul R., 4,604,950, Cl. 101-110.000.

Pittard, John E.: *See—*
Pritchard, Frederick D.; and Pittard, John E., 4,605,310, Cl. 366-142.000.

Plasynski, Joseph E.: *See—*
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., 4,605,478, Cl. 204-181.700.

Plocik, Daniel C.: *See—*
Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., 4,604,934, Cl. 83-880.000.

Plummer, Ernest L., to FMC Corporation. Benzocycloalkane-thiophenemethyl compounds as intermediates. 4,605,748, Cl. 549-43.000.

Plummer, Walter Allen: *See—*
Grenier, Claude A., 4,605,043, Cl. 138-149.000.

Podhajecki, Stephen T.: *See—*
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.

Poimanov, Anatoly M.: *See—*
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Polaroid Corporation: *See—*
Bullitt, Julian G., 4,605,608, Cl. 430-206.000.
Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, 4,605,849, Cl. 250-216.000.
Livingston, James J.; and Sorli, Duncan C., 4,605,297, Cl. 354-303.000.

Pollack, William; and Buzzelli, Edward S., to Westinghouse Electric Corp. Nickel-aluminum dry charge reserve battery. 4,605,604, Cl. 429-116.000.

Polonsky, Eli. Easy-out threaded fastener extractor. 4,604,917, Cl. 81-53.200.

Pontagnier, Henri: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.

Ponzo, Charles. Minnow trap. 4,604,823, Cl. 43-105.000.

Poppendiek, Heinz F.: *See—*
Sabin, Cullen M.; and Poppendiek, Heinz F., 4,604,902, Cl. 73-861.040.

Pospisil, Frank: *See—*
Myers, Melvin K.; and Pospisil, Frank, 4,605,272, Cl. 339-60.00M.

Potthof, Erwin: *See—*
Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, 4,606,058, Cl. 377-39.000.

Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, to Universite Francois Rabelais. Ultrasonic sweep echography and display endoscopic probe. 4,605,009, Cl. 128-660.000.

Powers, Kerns H.', to RCA Corporation. Compatible HDTV system employing nonlinear edge compression/expansion for aspect ratio control. 4,605,952, Cl. 358-13.000.

PPG Industries, Inc.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,605,724, Cl. 528-73.000.
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., 4,605,478, Cl. 204-181.700.
Darlington, William B.; and Hoelscher, Charles H., 4,605,545, Cl. 423-516.000.
Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., 4,604,934, Cl. 83-880.000.
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.

Prat, Gisele: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.

Precision Fukuhara Works, Ltd.: *See—*
Sawazaki, Masatoshi; and Yorisue, Shozo, 4,604,877, Cl. 66-224.000.

Preiner, Gerhard: *See—*
Muller, Johann; Trieschmann, Christa; and Preiner, Gerhard, 4,605,567, Cl. 427-54.100.

Prescher, Gunter: *See—*
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, 4,605,795, Cl. 568-867.000.

Pri-Bar, Ilan: *See—*
Buchman, Ouri; and Pri-Bar, Ilan, 4,605,749, Cl. 549-70.000.

Price, E. Pendleton. Treatment of Herpes Simplex viruses. 4,605,648, Cl. 514-180.000.

Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., to Motorola Inc. Titanium nitride MOS device gate electrode and method of producing. 4,605,947, Cl. 357-23.150.

Price, Jerry G.: *See—*
Gostomski, Dominic A., Jr.; and Price, Jerry G., 4,605,828, Cl. 200-5.00A.

Price, John E.; and De Clue, Larry W., to Amdahl Corporation. Inverter function logic gate. 4,605,871, Cl. 307-455.000.

Prisbe, Ernest J.: *See—*
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.

Pritchard, Frederick D.; and Pittard, John E., to Burlington Industries, Inc. Automated sizing system controlling using a radio transmitter level control. 4,605,310, Cl. 366-142.000.

Procter & Gamble Company, The: *See—*
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,605,509, Cl. 252-131.000.
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Proverb, Robert J.: *See—*
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Prussin, Samuel B.; Levine, Ralph; and Hintz, Warren J., to AE Development Corporation. Roll-on application of aqueous microencapsulated products. 4,605,554, Cl. 424-66.000.

Ptashnikov, Jury L.: *See—*
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.
Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., 4,605,520, Cl. 558-414.000.

Puck, Alfred; and Voirol, Peter, to Ciba-Geigy Corporation. Fibre reinforced plastics power transmission shaft. 4,605,385, Cl. 464-181.000.

Pudick, Sheldon: *See—*
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Pugach, Joseph, to Halcon SD Group, Inc., The. The Recovery of noble metal values from carbonylation residues using immiscible liquids. 4,605,541, Cl. 423-22.000.

Purnell, John H.: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.

Pyramid Optical, Inc.: *See—*
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Pyzik, Aleksander J.: *See—*
Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., 4,605,440, Cl. 75-238.000.

Quigley, Herbert J., Jr.: *See—*
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Quist, Bernardus B.: *See—*
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Rabinovich, Eleizer M.: *See—*
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Racon, Inc.: *See—*
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Rademacher-Dubbick, Kristian, to Rheometron A.G. Measured-value sensors for magnetic-inductive flowmeters. 4,604,905, Cl. 73-861.120.

Radford, Steven R.; and Davis, J. Stanley, to Norton Christensen, Inc. Shrouded core catcher. 4,605,075, Cl. 175-58.000.

Radiel, Harold E.: *See—*
Hooper, Jack L.; and Radiel, Harold E., 4,605,203, Cl. 254-93.0HP.

Raiche, H. Anthony: *See—*
Walters, Paul W.; Raiche, H. Anthony; and Busch, Lloyd E., 4,605,636, Cl. 502-39.000.

Rainville, Gerard. Archery exercising device. 4,605,223, Cl. 272-130.000.

Rajnik, Lawrence S., to Corning Glass Works. Trimming products from sheet glass. 4,605,429, Cl. 65-105.000.

Ramamurti, Krishnamurti, to Tokyo Shibaura Denki Kabushiki Kaisha. Light controlled x-ray scanner. 4,606,061, Cl. 378-10.000.

Ramboz, Gerard. Snowshoe. 4,604,817, Cl. 36-125.000.

Rankin, Arthur L., III, to Combustion Engineering, Inc. Highly abrasive resistant material and grinding roll surfaced therewith. 4,604,781, Cl. 29-402.070.

Rao, Chennupati K.; and D'Silva, Themistocles D., to Union Carbide Corporation. Pesticidal water-soluble aminoacid sulfenylated carbamates. 4,605,667, Cl. 514-477.000.

Rao, Dandina N., to Budra Research Ltd. Liquid vortex gas contactor. 4,604,988, Cl. 126-360.00A.

Rasmussen, David E.; and Moen, Bruce A., to Adolph Coors Company. Dual parison heating reflector and method. 4,605,839, Cl. 219-349.000.

Rasmussen, Erik; Lundquist, Gunnar; and Lading, Stig, to Lavrids Knudsen Maskinefabrik A/S. Double seat valve. 4,605,035, Cl. 137-240.000.

Rath, Dale R., to Tektronix, Inc. Rigid CRT shadow mask assembly. 4,605,879, Cl. 313-407.000.

Ratzlaff, Howard J.: *See—*
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Rauma-Repola Oy Loviisan Tehtaat: *See—*
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Raura, Pentti: *See—*
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Ravichandran, Ramanathan: *See—*
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RCA Corporation: *See—*
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Cohen, Edward, 4,605,960, Cl. 358-106.000.
Faith, Thomas J., Jr., 4,605,479, Cl. 204-192.00D.
Martinelli, Ramon U., 4,605,948, Cl. 357-34.000.
McCandless, Harry E.; and Villanyi, Sigmund T., 4,605,880, Cl. 313-414.000.
Powers, Kerns H.', 4,605,952, Cl. 358-13.000.
Reitmeier, Glenn A.; and Carlson, Curtis R., 4,605,963, Cl. 358-141.000.
Shahan, Donald J., 4,605,379, Cl. 445-59.000.
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RCR Industries, Inc.: *See—*
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Reak, B. Bennett: *See—*
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Rebuffat, Carlo. Purse-string instrument. 4,605,002, Cl. 128-321.000.

Recognition Equipment Incorporated: *See—*
Habitzreiter, Richard K.; Pinney, Robert V. B., Jr.; and Woolston, Mark S., 4,606,068, Cl. 382-56.000.

Redlich, Robert W. Integral monitor for ILS localizer. 4,605,930, Cl. 343-413.000.

Redman, Lance D.: *See—*
Spear, Robert J.; and Redman, Lance D., 4,605,453, Cl. 149-24.000.

Reed, Phillip G.: *See—*
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Region Wallonne, representee par l'Executif Regional Wallon: *See—*
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Reick, Franklin G.: *See—*
Wilder, Joseph R.; and Reick, Franklin G., 4,605,990, Cl. 362-32.000.

Reid, Bruce E., to Honeywell Inc. Cammed wire snap switch. 4,605,830, Cl. 200-73.000.

Reid, Russell H.: *See—*
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Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, to Merck Patent Gesellschaft mit beschrankter Haftung. Sorbitol, process for its preparation, and use thereof. 4,605,794, Cl. 568-852.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Pack for fluid filling materials with reclosable opening device. 4,604,850, Cl. 53-423.000.

Reimann, George J., to Mobil Oil Corporation. Razor blade cutter assembly. 4,604,927, Cl. 83-55.000.

Reimschuessel, Herbert K.; and Ulmer, Harry E., to Allied Corporation. Quaternary polyalkylene imine containing 2-hydroxypropyltrimethyl ammonium salt pendent side chain groups. 4,605,707, Cl. 525-410.000.

Reist, Walter, to Ferag AG. Method and apparatus for the intermediate storage of printed products arriving in an imbricated product formation such as newspapers, periodicals and the like. 4,604,851, Cl. 53-430.000.

Reitmeier, Franz: *See—*
Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, 4,605,129, Cl. 206-623.000.

Reitmeier, Glenn A.; and Carlson, Curtis R., to RCA Corporation. Reduction of control bits for adaptive sub-nyquist encoder. 4,605,963, Cl. 358-141.000.

Reliance Electric Company: *See—*
Mayszak, Michael T., 4,604,888, Cl. 72-379.000.
Pavel, Laszlo, 4,605,275, Cl. 339-119.00R.

Remington, John L.; and Boyer, Jon A., to Stanley Works, The. Modular mezzanine structure for a storage facility and method of assembly. 4,604,838, Cl. 52-73.000.

Remy, David C., to Merck & Co., Inc. Indeno[2,1-c]pyridine compounds, and their use as calcium channel blockers. 4,605,660, Cl. 514-290.000.

Repro-Med Systems, Inc.: *See—*
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Resolvex Corporation: *See—*
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Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, to Kohaszati Gyarepito Vallalat. Process for achieving proper weld quality in course of the welding operation, marking the faults on the workpieces and certifying the quality. 4,605,836, Cl. 219-130.010.

Reum, Helmut: *See—*
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Reyes, Daniel. Airplane powered by vehicular motor. 4,605,185, Cl. 244-60.000.

Reynhout, Marinus J.; and van der Scheer, Albert, to Shell Oil Company. Process for producing dense membranes. 4,605,526, Cl. 264-41.000.

Reynolds, Gordon S.; and Kendall, Sherman L., to Sorenco, Inc. Sprayer attachment for a hair dryer. 4,605,019, Cl. 132-9.000.

Reynolds Industries, Inc.: *See—*
Myers, Melvin K.; and Pospisil, Frank, 4,605,272, Cl. 339-60.00M.

Rheinmetall GmbH: *See—*
Zielinski, Erich; and Meschke, Harry, 4,604,941, Cl. 89-47.000.

Rheometron A.G.: *See—*
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Rhoa, Gregory A.: *See—*
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Rhode Gear USA: *See—*
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Rhodes, Marvin D.: *See—*
Mikulas, Martin M., Jr.; and Rhodes, Marvin D., 4,604,844, Cl. 52-632.000.

Rhodes, Richard P.; and Halbert, Thomas R., to Exxon Research and Engineering Co. Quaternary ammonium tetrathiovanadates. 4,605,752, Cl. 556-42.000.

Rhodes, Tony: *See—*
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Rhodes, Wayne A., to Johnstone Railway Supply Mfg., Co. Inc. Radiator heater solder pouring process. 4,605,154, Cl. 228-102.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, 4,605,547, Cl. 423-646.000.

Rhone-Poulenc Specialities Chimiques: *See—*
Lepage, Jean-Luc; and Soula, Gerard, 4,605,543, Cl. 423-347.000.

Ribbens, William B., to Borg-Warner Corporation. Driveline control system. 4,606,005, Cl. 364-431.010.

Richardson, Dean W.: *See—*
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Richez, Raymond M., to Region Wallonne, representee par l'Executif Regional Wallon. Bioreactive materials. 4,605,415, Cl. 623-16.000.

Richman, Lawrence D. Light transmission puzzle game. 4,605,231, Cl. 273-157.00A.

Richter, Bernd: *See—*
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Richter Gedeon Vegyeszeti Gyar R.T: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Ricoh Company, Ltd.: *See—*
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Mochimaru, Hideaki, 4,605,299, Cl. 355-3.00R.
Ogawa, Mutsuo, 4,605,848, Cl. 250-205.000.
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,605,295, Cl. 354-154.000.

Riddle, Herbert S.; and Bodio, Mark. Digital word-framing technique and system. 4,605,921, Cl. 340-347.0DD.

Ridgway, Steve H. Trailer for storing and drying harvested crops. 4,604,815, Cl. 34-201.000.

Rieben, Werner P.; and Willson, Jill M., to General Electric Company. Customized canned cycles for computer numerical control system. 4,606,001, Cl. 364-167.000.

Riegler, Ernst: *See—*
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,606,038, Cl. 373-24.000.

Rieke, Herbert W., to Scott Paper Company. Dispensing carrier box and blank. 4,605,128, Cl. 206-611.000.

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Rigaku Keisoku Kabushiki Kaisha: *See—*
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Riley, Derek C.; and Johnston, David, to Sterling Drug Inc. Method of preparing steroid compounds of controlled particle size. 4,605,517, Cl. 540-52.000.

Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, to Odam, Societe Anonyme. Applicator for supplying radio-frequency energy to and from an object. 4,605,012, Cl. 128-804.000.

Rinkewich, Isaac, to M.I.T. Polycart Corp. Security cart. 4,605,267, Cl. 312-297.000.

Rite-Hite Corporation: *See—*
Hahn, Norbert; and Olson, Arthur A., Jr., 4,605,353, Cl. 414-401.000.

Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
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Ritter, Keith A.: *See—*
Persyk, Dennis E.; and Ritter, Keith A., 4,605,856, Cl. 250-363.00S.

Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., to Salk Institute for Biological Studies, The. CRF antagonists. 4,605,642, Cl. 514-12.000.

Rivier, Jean E. F.: *See—*
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., 4,605,642, Cl. 514-12.000.

Robbins, Jeffery D., to Stauffer Chemical Company. Method for preparation of N-phosphonomethylglycine or salts. 4,605,522, Cl. 260-502.50F.

Roberge, Jean M.: *See*—
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Robert Bosch GmbH: *See*—
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, 4,604,978, Cl. 123-374.000.
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.
Hankel, Rainer; Pham, Minh-Chanh; and Peuser, Sieghart, 4,605,308, Cl. 356-373.000.
Krieger, Eberhard; and Moser, Theo, 4,605,393, Cl. 493-317.000.
Leblanc, Jean, 4,604,980, Cl. 123-450.000.
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Roberts, Daryl L.; and Laine, Richard M., to SRI International. Gas separation process. 4,605,475, Cl. 204-130.000.

Robertshaw Controls Company: *See*—
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Robinson, Melvin T.: *See*—
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.

Robinson, Paul A., Jr., to United States of America, National Aeronautics and Space Administration. Fet charge sensor and voltage probe. 4,605,946, Cl. 357-23.100.

Robinson, Thomas C., to Thoratec Laboratories Corporation. Arterial graft prosthesis. 4,604,762, Cl. 62-1.000.

Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, to Julius Blum Gesellschaft m.b.H. Hinge. 4,604,769, Cl. 16-238.000.

Rockwell International Corporation: *See*—
Burns, Richard H., 4,605,290, Cl. 350-619.000.
Harrington, Timothy A., 4,605,902, Cl. 328-158.000.
Holmes, Dale A., 4,606,036, Cl. 372-95.000.
Lienert, Gerold, 4,604,881, Cl. 72-53.000.

Rodeffer, Charles E., to Winegard Company. Automatic voltage line loss compensation control for an antenna receiver. 4,606,074, Cl. 455-131.000.

Roger Bullivant of Texas, Inc.: *See*—
Bullivant, Roger A., 4,605,339, Cl. 405-237.000.

Rohrback Technology Corporation: *See*—
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Rohrer, Heinrich: *See*—
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Roj Electrotex S.p.A.: *See*—
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Rollo, Richard P. Open end ratchet socket wrench. 4,604,919, Cl. 81-58.200.

Rometsch, Gunter: *See*—
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Romocki, Julian M. E.: *See*—
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Roosen, Reiner. Holding unit for mounting and aligning printing plates. 4,604,811, Cl. 33-184.500.

Rose, Christian S.; and Lacombe, Jacques, to Universite Rene Descartes (Paris V). Hydrocephaly treatment device including a variable impedance filter. 4,605,395, Cl. 604-9.000.

Rose, Leroy: *See*—
Knepper, James A.; and Rose, Leroy, 4,605,218, Cl. 271-238.000.

Rosen, Bernard A. Training device for setting broken limbs. 4,605,373, Cl. 434-274.000.

Rosenthal, Bruce D.; and Gray, Richard L., to Teledyne Industries, Inc. Precisely adjustable voltage controlled current mirror amplifier. 4,605,907, Cl. 330-257.000.

Ross, Richard J., to Baker Oil Tools, Inc. Chemical injection tubing anchor-catcher. 4,605,063, Cl. 166-216.000.

Ross, Richard J.: *See*—
Klumpyan, Joseph N.; and Ross, Richard J., 4,605,062, Cl. 166-127.000.

Ross, William A.: *See*—
Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., 4,605,937, Cl. 346-76.0PH.

Rossi, Giulio A., to Norton Company. Advanced preparation of ceramic powders. 4,605,631, Cl. 501-1.000.

Rossi, John P.: *See*—
Goldberg, Abraham A.; McMann, Renville H.; and Rossi, John P., 4,605,950, Cl. 358-11.000.

Roth, Douglas D.; and Ethridge, Fredrick A., to Celanese Corporation. Melt-spinning apparatus for polyester filaments. 4,605,364, Cl. 425-72.00S.

Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., to Senmed, Inc. Surgical stapling instrument with dual staple height mechanism. 4,605,001, Cl. 128-305.000.

Rotpunkt Dr. Anso Zimmermann: *See*—
Zimmermann, Anso, 4,605,134, Cl. 215-13.00A.
Zimmermann, Anso, 4,605,225, Cl. 222-566.000.

Roussel Uclaf: *See*—
Carle, Pierre R., 4,605,549, Cl. 424-18.000.

Ruffin, Paul B., to United States of America, Army. Efficient design technique for wavelength division multiplexing. 4,606,020, Cl. 370-3.000.

Rullman, Paul B.: *See*—
Goldsmith, John W.; and Rullman, Paul B., 4,605,248, Cl. 285-52.000.

Rummel, Andreas: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Rung, Robert D., to Tokyo Shibaura Denki Kabushiki Kaisha. Programmable CMOS circuit for use in connecting and disconnecting a semiconductor device in a redundant electrical circuit. 4,605,872, Cl. 307-465.000.

Rupprechter, Helmut: *See*—
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Ruscic, Branko M.: *See*—
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Rush, David H.: *See*—
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Russel, Matthew J.; and Borruso, Rose M., to Eastman Kodak Company. Electrographic transfer roller drive mechanism. 4,605,298, Cl. 355-3.0TR.

Russell, Chesley G. Self supporting outdoor sleeping system. 4,605,029, Cl. 135-104.000.

Ruta, Joseph W.: *See*—
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Rutledge, Jerry D.: *See*—
Bessinger, Walter L.; and Rutledge, Jerry D., 4,605,265, Cl. 384-20.000.

Ryan, Daniel F., to Exxon Research and Engineering Co. Coal liquefaction process with increased naphtha yields. 4,605,486, Cl. 208-412.000.

Ryder, Geoffrey A., to Evans, Trevor G.; Ryder, Geoffrey A.; and Evans, Lyn T. Screw-topped containers having safety means. 4,605,135, Cl. 215-220.000.

S&C Electric Company: *See*—
Harner, Robert H.; and Ruta, Joseph W., 4,605,982, Cl. 361-94.000.

Sabin, Cullen M.; and Poppendiek, Heinz F., to Geoscience Ltd. Means and techniques useful in mass flowmeters for multiphase flows. 4,604,902, Cl. 73-861.040.

Sackmann, Karl H.: *See*—
Anselment, Christoph; and Sackmann, Karl H., 4,605,850, Cl. 250-221.000.

Saglio, Robert, to Commissariat a l'Energie Atomique. Multitransducer ultrasonic probe with transducers of different sizes. 4,604,897, Cl. 73-626.000.

Saglio, Robert: *See*—
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.

St. Florian Company: *See*—
Klievoneit, Harold R.; and Esposito, Augustine G., 4,605,249, Cl. 285-98.000.

Saint-Gobain Vitrage: *See*—
Petitcollin, Jean-Marc; and Taworski, Andre , 4,605,528, Cl. 264-216.000.

Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, to Sony Corporation. Supporting device for an electron beam landing position selecting mask of a color cathode ray tube. 4,605,878, Cl. 313-406.000.

Saitama Kako Co., Ltd.: *See*—
Torii, Masakatsu, 4,605,224, Cl. 272-146.000.

Saito, Keiji: *See*—
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.

Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., to Nitto Electric Industrial Co., Ltd. Method for percutaneously administering metoclopramide. 4,605,670, Cl. 514-619.000.

Saito, Kohji: *See*—
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Saito, Makoto: *See*—
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, 4,605,356, Cl. 417-102.000.

Saito, Masahiko: *See*—
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Saito, Shozo, to Tokyo Shibaura Denki Kabushiki Kaisha. Dynamic memory device. 4,606,010, Cl. 365-149.000.

Saito, Yasuo, to Kabushiki Kaishi Toshiba. X-ray computed tomographic apparatus. 4,606,062, Cl. 378-13.000.

Saitoh, Yokuo: *See*—
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Sajima, Yasuo: *See*—
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Sakaguchi, Sanae: *See*—
Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, 4,605,442, Cl. 106-22.000.

Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, to Hitachi, Ltd. Process for producing core for casting. 4,605,057, Cl. 164-519.000.

Sakai, Masanori: *See*—
Nagano, Satoshi; and Sakai, Masanori, 4,605,388, Cl. 474-152.000.
Sakakibara, Kouzou: *See*—
Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.
Sakakibara, Yozo; and Okamoto, Yuji, to Toyota Jidosha Kabushiki Kaisha. Vehicle door structure. 4,605,260, Cl. 296-201.000.
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, to Nippon Piston Ring Co., Ltd. Heat- and abrasion-resistant coating material. 4,605,695, Cl. 524-424.000.
Sakamoto, Masahiro: *See*—
Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, 4,605,622, Cl. 435-182.000.
Sakamoto, Masakatsu: *See*—
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, 4,605,356, Cl. 417-102.000.
Sakamoto, Masamichi, to Sony Corporation. Combination refractive index-guiding type and a gain-guiding type semiconductor laser device. 4,606,033, Cl. 372-45.000.
Sakano, Toshiyuki, to Tsudakoma Corp. Takeup motion control device for looms. 4,605,044, Cl. 139-304.000.
Sakano, Yasuo: *See*—
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.
Sakura Color Products Corporation: *See*—
Masuda, Yoshiaki; Fukuo, Hidetoshi; and Yamamoto, Masaji, 4,605,441, Cl. 106-21.000.
Sakurai, Toshifumi: *See*—
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, 4,605,917, Cl. 335-128.000.
Salk Institute for Biological Studies, The: *See*—
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., 4,605,642, Cl. 514-12.000.
Salvatore, Amedeo: *See*—
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Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., to Insitute po Technicheska Kibernetika iRobotika. Planetary wire-feeding device. 4,605,148, Cl. 226-174.000.
Samson, John N. R., to BP Chemicals Limited. Cationic polymerization of 1-olefins. 4,605,808, Cl. 585-525.000.
Samuelsson, Soren. Squeegee blade trimmer. 4,604,802, Cl. 30-124.000.
Sand, I. Daniel: *See*—
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, 4,605,721, Cl. 527-312.000.
Sandberg, Karen R.: *See*—
Jansma, Roger H.; and Sandberg, Karen R., 4,605,718, Cl. 526-240.000.
Sandel, Dan; and Hoftman, Michael, to Devon Industries, Inc. Disposable cover for surgical light handle. 4,605,124, Cl. 206-223.000.
Sander, Ulrich: *See*—
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.
Sandling, Michael J.: *See*—
Smith, Russell G.; and Sandling, Michael J., 4,605,036, Cl. 137-327.000.
Sandstrom, Paul H.: *See*—
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.
Sanford, Dock: *See*—
Goolsby, Thomas C.; and Sanford, Dock, 4,605,580, Cl. 428-92.000.
Sankyo Manufacturing Company, Ltd.: *See*—
Kato, Heizaburo, 4,605,147, Cl. 226-156.000.
Sano, Nitiro: *See*—
Tsuno, Kazuhiko; and Sano, Nitiro, 4,605.202, Cl. 251-315.000.
Sano, Yoshikazu: *See*—
Komuro, Isaku; Sano, Yoshikazu; and Shibata, Shinichi, 4,605,825, Cl. 179-99.00R.
Sanyo Electric Co., Ltd.: *See*—
Ishii, Toshihiko; and Takasu, Hiromi, 4,605,944, Cl. 357-17.000.
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, to Sasaki Nouki Kabushiki Kaisha. Agricultural baler. 4,604,859, Cl. 56-341.000.
Sasaki, Haruo: *See*—
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.
Sasaki Nouki Kabushiki Kaisha: *See*—
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.
Sasaki, Susumu; and Nakamura, Hiroshi, to Fujitsu Limited. Radio communication system. 4,606,048, Cl. 375-39.000.
Sasayama, Takao: *See*—
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.
Sato, Hideo: *See*—
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.
Sato, Katsuo: *See*—
Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, 4,605,765, Cl. 564-367.000.
Sato, Ken, to Olympus Optical Company, Ltd. Endoscope system. 4,604,992, Cl. 128-6.000.
Sato, Kimio, to Rigaku Keisoku Kabushiki Kaisha. Magnetic fluid sealing device. 4,605,233, Cl. 277-80.000.
Sato, Koichi: *See*—
Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, 4,605,701, Cl. 525-107.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, to Sun Star Kabushiki Kaisha. Composition and method for treating keratosic disorder of skin and mucosa. 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, to Sun Star Kabushiki Kaisha. Composition and method for treating erythematodes and mycosis. 4,605,556, Cl. 424-85.000.
Sato, Yuji: *See*—
Kanda, Motoya; and Sato, Yuji, 4,605,603, Cl. 429-59.000.
Sato, Yukio: *See*—
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Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.
Saturn Limited: *See*—
Baarse, Dick, 4,604,828, Cl. 49-322.000.
Satzinger, Gerhard; Fritschi, Edgar; and Herrmann, Manfred, to Warner-Lambert Company. 7H-dibenzo(a,c,)cyclohepten-5-one-(7) derivatives. 4,605,673, Cl. 514-654.000.
Savolainen, Kalevi: *See*—
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.
Sawada, Mitsuo: *See*—
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Sawada, Yasushi: *See*—
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Sawazaki, Masatoshi; and Yorisue, Shozo, to Precision Fukuhara Works, Ltd. Needle selection device for knitting machines. 4,604,877, Cl. 66-224.000.
Sawby, Scott. Folding knife. 4,604,803, Cl. 30-161.000.
Sayovitz, John J.; Mitchell, Kenneth J.; and Mathis, Michael P., to Kimberly-Clark Corporation. Method of ultrasonically bonding nonwoven webs. 4,605,454, Cl. 156-73.100.
Scarpa, Michael C.: *See*—
Cook, Stuart A.; Reed, Phillip G.; and Scarpa, Michael C., 4,605,382, Cl. 446-330.000.
Scarpa, Thomas J. Flowmeter. 4,604,906, Cl. 73-861.740.
Schachter, Robert A. Combined wind screen and beach bag. 4,606,070, Cl. 383-4.000.
Schaetzke, William R.; and DuFries, Ronald W., to Morgan Construction Company. Mass flow control system for wire drawing machine. 4,604,883, Cl. 72-280.000.
Schafer, David E.; and Czajkowski, Albert J., to Monsanto Company. Compositions and methods for reducing herbicidal injury. 4,605,431, Cl. 71-87.000.
Schafer, Erich E.: *See*—
Link, Helmut F.; and Schafer, Erich E., 4,604,923, Cl. 82-1.00C.
Schaller, Heinz E.; and Pfaff, Eberhard P., to Biogen N.V. Small peptides with the specificity of foot and mouth disease viral antigens. 4,605,512, Cl. 260-112.005.
Schaller, Helmut: *See*—
Page, John F.; and Schaller, Helmut, 4,604,936, Cl. 84-313.000.
Schelchshorn, Joachim: *See*—
Tiltscher, Helmut; Wolf, Helmut; Schelchshorn, Joachim; and Dialer, Kurt, 4,605,811, Cl. 585-670.000.
Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Method of laminating high barrier shrink film. 4,605,460, Cl. 156-229.000.
Schittko, Hermut; and Schultz, Peter. Method and apparatus for the coded tagging of articles, particularly garments. 4,605,847, Cl. 235-471.000.
Schlage Lock Company: *See*—
Neary, Ralph E.; and Hull, Scott A., 4,604,879, Cl. 70-224.000.
Schloemer, George C., to Syntex Pharmaceuticals International Ltd. Preparation of α-arylalkanoic acids. 4,605,758, Cl. 562-418.000.
Schmanski, Donald W.; and Landis, Scott, to Carsonite International Corporation. Collapsible recreational fence. 4,605,204, Cl. 256-19.000.
Schmid, Gunther: *See*—
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Schmid, Kurt: *See*—
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., to BASF Corporation. Process for preparing spray-dried powders containing a water-soluble vitamin and powders prepared thereby. 4,605,666, Cl. 514-474.000.
Schmidt, Peter C.: *See*—
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

Schmidt, Rudiger: *See*—
Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, 4,605,087, Cl. 180-248.000.
Schmidt, Timothy J.: *See*—
Fisher, Alfred J., III; and Schmidt, Timothy J., 4,605,180, Cl. 242-107.40A.
Schneider, David A.: *See*—
Chiu, Norman H.; and Schneider, David A., 4,604,871, Cl. 62-130.000.
Schneider, Donald; and Schneider, Stanley. Releasable affixation of article of manufacture to an environment. 4,604,856, Cl. 54-76.000.
Schneider, Stanley: *See*—
Schneider, Donald; and Schneider, Stanley, 4,604,856, Cl. 54-76.000.
Schnurmann, Henri D.: *See*—
Peters, Robert M.; Schnurmann, Henri D.; and Vidunas, Louis J., 4,606,025, Cl. 371-20.000.
Schnurr, Richard D.: *See*—
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, 4,605,114, Cl. 192-106.200.
Schoenenberger, Carl F.: *See*—
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Trevarrow, David J., 4,605,346, Cl. 408-147.000.
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Schreiner, Charles P.: *See*—
Nienhuis, James H.; and Schreiner, Charles P., 4,605,988, Cl. 361-429.000.
Schroder, Wolfgang, to International Standard Electric Corporation. Bi-phase decoder. 4,606,053, Cl. 375-87.000.
Schultz, Dennis B. Article retaining device. 4,604,765, Cl. 5-413.000.
Schultz, Eileen L.: *See*—
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., 4,605,406, Cl. 623-1.000.
Schultz, Peter: *See*—
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Schultz, Robert G.: *See*—
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, to Arbed S.A. Process for producing a rolled steel product having high weldability, a high yield strength and a good notch impact toughness at very low temperatures. 4,605,449, Cl. 148-12.00B.
Schwaab, Josef: *See*—
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.
Schwank, Johannes W.: *See*—
Curtis, M. David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, 4,605,751, Cl. 556-29.000.
Schwartz, Harold: *See*—
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.
Schwartz, Leonard: *See*—
Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., 4,605,931, Cl. 343-700.0MS.
Schwenzer, Alfred F.: *See*—
Voltmer, Helmut; and Schwenzer, Alfred F., 4,605,459, Cl. 156-215.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Astable optical multi-vibrator. 4,606,032, Cl. 372-38.000.
Scott, Andrew M.; Quist, Bernardus B.; and Terlouw, Teunis, to Shell Oil Company. Centrifugal pump for pulverized material. 4,605,352, Cl. 414-217.000.
Scott Paper Company: *See*—
Rieke, Herbert W., 4,605,128, Cl. 206-611.000.
Scott, William D.: *See*—
Swartout, James J.; and Scott, William D., 4,605,048, Cl. 144-136.00B.
Scriven, Roger L.: *See*—
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., 4,605,478, Cl. 204-181.700.
Seaber, Geoffrey B.: *See*—
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Seal-Air Control Systems Inc.: *See*—
Greiner, Waldemar H., 4,605,198, Cl. 251-58.000.
Sealfon, Andrew I., to Repro-Med Systems, Inc. Implantable medical prosthesis for obviating male impotency. 4,604,994, Cl. 128-79.000.
Sebilet, Bruno R.: *See*—
Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,606,039, Cl. 375-1.000.
Seelbach, Christian A.: *See*—
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Seeley, Frederic F., to F. F. Seeley Nominees Pty Ltd. Evaporative coolers. 4,604,874, Cl. 62-298.000.
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Hubbard, David W.; and Seestrom, Frank E., 4,605,939, Cl. 346-140.00R.
Seevinck, Evert; and Van Tuijl, Adrianus J. M., to U.S. Philips Corporation. Current-source arrangement. 4,605,892, Cl. 323-315.000.
Seher, Gero: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.
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Seidler, Jack, to North American Specialties Corporation. Solder-bearing leads. 4,605,278, Cl. 339-275.00B.
Seiken Kai Foundational Juridical Person: *See*—
Hata, Kosei, 4,605,502, Cl. 210-611.000.
Seitoh, Shigemitsu: *See*—
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, to Tokyo Shibaura Denki Kabushiki Kaisha. System for detecting and recovering a transmitted signal. 4,606,050, Cl. 375-75.000.
Sekimoto, Yukihiko: *See*—
Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, 4,605,505, Cl. 252-8.514.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Obana, Satoshi, 4,605,686, Cl. 523-105.000.
Sellier, Quentin, to Duchess Industries, Inc. Watchband/watchcase connection. 4,605,312, Cl. 368-282.000.
Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco Inc. Method for making syntactic foam with improved processing characteristics using a silane coupling agent in combination with an aminated alkylphenol alkoxylate. 4,605,688, Cl. 523-218.000.
Senatore, Guy, to Phillips Petroleum Company. Polyarylene sulfide preparation method with dithionite. 4,605,733, Cl. 528-388.000.
Senese, Frank J.; and Baillie, Lloyd A., to Atlantic Richfield Company. Leak detector. 4,604,893, Cl. 73-49.200.
Senior, Robert M.: *See*—
Urry, Dan W.; and Senior, Robert M., 4,605,413, Cl. 623-11.000.
Senmed, Inc.: *See*—
Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., 4,605,001, Cl. 128-305.000.
Senstar Security Systems Corp.: *See*—
Harman, R. Keith, 4,605,914, Cl. 333-237.000.
Serrie, Gerard J.: *See*—
Huvet, Jean-Marie; and Serrie, Gerard J., 4,605,981, Cl. 361-91.000.
Service National Electricite de France: *See*—
Daney, Georges J., 4,605,838, Cl. 219-319.000.
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Difonzo, Alexander J.; and Seshamani, Venkatraman, 4,604,972, Cl. 122-510.000.
Sette, Paul R., to Pitney Bowes Inc. Worm gear rack movement system. 4,604,950, Cl. 101-110.000.
Seyler, Jay K.: *See*—
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,605,514, Cl. 530-307.000.
Sgourakes, George E.; Angelosanto, John P.; and Malloy, Barry T., to Foxboro Company, The. Reference pressure devices for calibrating pressure-measuring instruments. 4,604,891, Cl. 73-4.00R.
Shahan, Donald J., to RCA Corporation. Kinescope panel/mask frame assembly thumper and flush device and method. 4,605,379, Cl. 445-59.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Surgical articles of copolymers of glycolide and ε-caprolactone and methods of producing the same. 4,605,730, Cl. 528-357.000.
Shandon Southern Products Limited: *See*—
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, 4,604,964, Cl. 118-50.000.
Shannon, Gary L. Weightlifting exercise bar. 4,605,222, Cl. 272-122.000.
Sharp Kabushiki Kaisha: *See*—
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Sheehan, Joseph C. M., to Kells Medical, Inc. Wound closure device and method for using same. 4,605,005, Cl. 128-335.000.
Shell Oil Company: *See*—
John, Christopher S., 4,605,782, Cl. 568-484.000.
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Shephard, Margaret C.: *See*—
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Sherman, James B.: *See*—
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Sherritt Gordon Mines Limited: *See*—
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Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,605,624, Cl. 435-253.000.
Shibata, Shinichi: *See*—
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Shibuya, Masayuki: *See*—
Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, 4,605,109, Cl. 192-4.00C.
Shih, Hung-Dah; and Bennett, Tommy J., to Texas Instruments Incorporated. MBE system with in-situ mounting. 4,605,469, Cl. 156-610.000.
Shiho, Toshio: *See*—
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Shiino, Kazuo: *See*—
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.
Shimada, Mitsuhiro: *See*—
Yamamoto, Yoichi; and Shimada, Mitsuhiro, 4,605,936, Cl. 346-76.0PH.
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, to Nissan Motor Co., Ltd.; and Sunrise Meisei Corporation. Method and apparatus for panel wiping operation. 4,605,569, Cl. 427-256.000.
Shimizu, Isamu: *See*—
Fujiwara, Ryoji; and Shimizu, Isamu, 4,605,285, Cl. 350-357.000.
Shimizu, Sakayu: *See*—
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,605,625, Cl. 435-280.000.
Shimizu, Shinkichi: *See*—
Matsuda, Teruo; Shimizu, Shinkichi; and Iwasa, Masaaki, 4,605,779, Cl. 568-450.000.
Shimizu, Toshihiko: *See*—
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.
Shimofuruta, Akihiro, to Kamakura Koki Kabushiki Kaisha. Zoom interlocking mechanism for binocular. 4,605,288, Cl. 350-552.000.
Shinagawa Refractories Co., Ltd.: *See*—
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.
Shionogi & Co., Ltd.: *See*—
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.
Shiozaki, Shozo: *See*—
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,605,625, Cl. 435-280.000.
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, to Asahi Glass Company, Ltd. Filter press type electrolytic cell. 4,605,482, Cl. 204-258.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Co., Ltd. Door window regulator. 4,604,829, Cl. 49-352.000.
Shiraki, Yasuhiro: *See*—
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Shiroki, Hiroyuki; and Noaki, Yasuhide, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrogen-evolution electrode. 4,605,484, Cl. 204-290.00R.
Shiseido Company Ltd.: *See*—
Kikuchi, Masashi; and Matsuoka, Masahiro, 4,605,419, Cl. 8-426.000.
Shomura, Eiichi; and Goto, Taiji, to Janome Sewing Machine Co., Ltd. Polychrome printing platen of a printer. 4,605,328, Cl. 400-662.000.
Shortridge, Douglas. Basic derivatives of azo benzene. 4,605,734, Cl. 534-738.000.
Shrimpton, Wallace. Process for cell separation. 4,605,558, Cl. 424-105.000.
Shurney, Glenn A.: *See*—
Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., 4,605,021, Cl. 132-33.00R.
Shutt, Donald P.: *See*—
Hallidy, William M.; and Shutt, Donald P., 4,605,107, Cl. 192-0.02R.
Sias, Ralph M.; Hurley, Nancy J.; and Dalebout, Melvin W., to American Hospital Supply Corporation. Body support pad. 4,605,582, Cl. 428-120.000.
Sickels, Anthony R., to Soundfold, Inc. Multidirectional sound absorber. 4,605,088, Cl. 181-30.000.
Siebel, Peter: *See*—
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, to Degussa Aktiengesellschaft. Continuous process for the production of pentanediol-1,2. 4,605,795, Cl. 568-867.000.
Siemens Aktiengesellschaft: *See*—
Amstutz, Johann; and Wenger, Bruno, 4,605,822, Cl. 179-16.0AA.
Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, 4,605,824, Cl. 179-18.0HB.
Goetz, Werner, 4,605,188, Cl. 248-157.000.
Haendle, Joerg, 4,606,064, Cl. 378-99.000.
Hartmann, Gunter, 4,605,344, Cl. 408-95.000.
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, 4,606,042, Cl. 375-2.100.
Klar, Heiner; and Mauthe, Manfred, 4,606,060, Cl. 377-60.000.
Pfleiderer, Hans-Joerg; and Knauer, Karl, 4,605,913, Cl. 333-166.000.
Utecht, Manfred, 4,605,316, Cl. 384-99.000.
Siemens Gammasonics, Inc.: *See*—
Persyk, Dennis E.; and Ritter, Keith A., 4,605,856, Cl. 250-363.00S.
Signode Corporation: *See*—
Annis, James R., Jr., 4,605,456, Cl. 156-157.000.
Silver Seiko Ltd.: *See*—
Ueki, Junzo; and Nakajima, Yoshiaki, 4,605,327, Cl. 400-208.000.
Silvers, Ralph H., Jr., to Transamerica Delaval Inc. Tool changer for manipulator arm. 4,604,787, Cl. 29-568.000.
Silvis, H. Craig; and Morgan, Ted A., to Dow Chemical Company, The. Process for preparing spirobiindanols. 4,605,789, Cl. 568-721.000.
Simo-Company, Angel. Internal brake for doors. 4,605,250, Cl. 292-171.000.
Simpson, Frederick H.; and Verzemnieks, Juris, to Boeing Company, The. Barrier coated ceramic fiber and coating method. 4,605,588, Cl. 428-288.000.
Singer Company, The: *See*—
Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., 4,605,931, Cl. 343-700.0MS.
Singleton, Daniel A.: *See*—
Brunelle, Daniel J.; and Singleton, Daniel A., 4,605,745, Cl. 546-304.000.
Sir Pegasus, Inc.: *See*—
McKibben, David P., 4,605,071, Cl. 168-12.000.
Sivaramakrishnan, Parameswar: *See*—
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,605,774, Cl. 568-48.000.
Skeie, Halvor, to X-Cyte Inc. Surface acoustic wave passive transponder having optimally-sized transducers. 4,605,929, Cl. 343-6.80R.
SKF Industrial Trading and Development Company B.V.: *See*—
Korenhof, Abraham, 4,605,319, Cl. 384-484.000.
SKF Kugellagerfabriken GmbH: *See*—
Brandenstein, Manfred; and Haas, Roland, 4,605,113, Cl. 192-98.000.
SKF Kugellagerfbriken GmbH: *See*—
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,605,321, Cl. 384-512.000.
Skinner, Wilfred A.: *See*—
Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., 4,605,670, Cl. 514-619.000.
Skuratovsky, Eugene: *See*—
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.
Skurkovich, Simon V., to Skurkovich, Simon V. Methods for the treatment of pathological conditions by removing interferon from the organism. 4,605,394, Cl. 604-4.000.
SKW Trostberg Aktiengesellschaft: *See*—
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,606,038, Cl. 373-24.000.
Slater, William M.: *See*—
Fyfe, Edward R.; and Slater, William M., 4,605,106, Cl. 188-374.000.
Slaw, Robert A., Sr. Joint construction of concrete members. 4,605,336, Cl. 404-6.000.
Slepicka, Gregory L.: *See*—
Bastian, Donald G.; and Slepicka, Gregory L., 4,604,931, Cl. 83-665.000.
Slevin, Julian B. Method and machine for producing complance carrier cartons. 4,605,464, Cl. 156-253.000.
Sloan, Gary W.; and Nelson, Walter H., to Goodyear Tire & Rubber Company, The. Apparatus for trimming tires. 4,605,051, Cl. 157-13.000.
Slyman Manufacturing Corporation: *See*—
Buehl, Arnold L., 4,605,369, Cl. 431-328.000.
Smillie, Winston B. Apparatus for improved fuel efficiency. 4,605,523, Cl. 261-1.000.
Smith, Harry D., Jr., to Halliburton Company. Measurement of formation porosity using fast neutron spectroscopy. 4,605,854, Cl. 250-266.000.
Smith, Russell G.; and Sandling, Michael J., to Xomox Corporation. Valve housing with removable self-contained valving unit. 4,605,036, Cl. 137-327.000.
Sneider, Vincent R. Disposable pad for panty hose. 4,605,404, Cl. 604-385.100.
Societe Anonyme D.B.A.: *See*—
Carre, Jean-Jacques; and Escarabajal, Ghislain, 4,605,103, Cl. 188-71.500.
Societe Anonyme Dite "Etablissements Paturle" : *See*—
Ott, Renaud P. L.; and Jalabert, Georges E. P., 4,604,843, Cl. 52-426.000.
Societe Cortial: *See*—
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Societe d'Electronique de la Region Pays de Loire: *See*—
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.
Societe Nationale des Chemins de fer Francais: *See*—
Genans, Michel, 4,605,115, Cl. 198-341.000.
Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See*—
Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,606,039, Cl. 375-1.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Voirin, Robert, 4,605,546, Cl. 423-576.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Ometz, Pierre H. M.; and Labrador, Jacques A. L., 4,605,851, Cl. 250-223.00B.

Soderstrom, Sven-Erik: *See—*
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,605,302, Cl. 356-5.000.

Soffge, Friedhelm; and Knauss, Hans-Peter, to Ing. h.c.F. Porsche AG. Drive system for a rotary-, pivot-, and propelling-drive of a vehicle especially of an excavating machine. 4,604,915, Cl. 74-790.000.

Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, to Japan Tobacco, Inc. Process for preparing tobacco flavoring formulations. 4,605,016, Cl. 131-297.000.

Sogoian, George C.: *See—*
Hibbs, Louis E., Jr.; and Sogoian, George C., 4,605,343, Cl. 407-119.000.

Sohajda, Attila: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Sohio Alternate Energy Development Co.: *See—*
Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., 4,605,494, Cl. 209-166.000.
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.

Solar Turbines Incorporated: *See—*
Metcalfe, Arthur G., 4,604,780, Cl. 29-156.80R.

Solvay & Cie. (Societe Anonyme): *See—*
Ninane, Leon; Breton, Claude; and Guerdon, Constant, 4,605,771, Cl. 564-497.000.

Sonobe, Hiraku, to Canon Kabushiki Kaisha. Automatic sheet processing device having tiltable collecting tray adjacent corner binder station. 4,605,211, Cl. 270-53.000.

Sony Corporation: *See—*
Collins, Mark C., 4,605,966, Cl. 358-160.000.
Hayashi, Toshihide, 4,605,968, Cl. 358-188.000.
Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, 4,605,878, Cl. 313-406.000.
Sakamoto, Masamichi, 4,606,033, Cl. 372-45.000.
Sugiki, Mikio; and Watanabe, Kenjiro, 4,606,018, Cl. 369-279.000.
Takeshita, Kaneyoshi, 4,605,862, Cl. 250-578.000.
Wilkinson, James H.; and Creed, David M., 4,605,953, Cl. 358-24.000.

Soplar SA: *See—*
Lehner, Alwin, 4,605,462, Cl. 156-245.000.

Sorber, Robert, to Keane Monroe Corporation. Automatic sliding door operator. 4,604,826, Cl. 49-31.000.

Sorenco, Inc.: *See—*
Reynolds, Gordon S.; and Kendall, Sherman L., 4,605,019, Cl. 132-9.000.

Sorli, Duncan C.: *See—*
Livingston, James J.; and Sorli, Duncan C., 4,605,297, Cl. 354-303.000.

Sotoma, Koichi: *See—*
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Soula, Gerard: *See—*
Lepage, Jean-Luc; and Soula, Gerard, 4,605,543, Cl. 423-347.000.

Soundfold, Inc.: *See—*
Sickels, Anthony R., 4,605,088, Cl. 181-30.000.

Soutsos, Michael D. Drill pipe turning device. 4,604,922, Cl. 81-57.170.

Sparks, Jimmy L., to Horse Health Products, Inc. Cutting device for limb wrappings. 4,604,804, Cl. 30-294.000.

Spear, Robert J.; and Redman, Lance D., to Commonwealth of Australia, The. Firing cap composition containing lead styphnate. 4,605,453, Cl. 149-24.000.

Spector, George: *See—*
Mahana, Elliott; and Spector, George, 4,605,219, Cl. 272-75.000.

Sperry Corporation: *See—*
Matthews, Hugh B., 4,605,977, Cl. 360-103.000.

Spetsialnoe Konstruktorskoe Bjuro "Transprogress" : *See—*
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.

Spetsialnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Po Pogruzhnomu Elektrooborudovaniju Dlya Burenia Skvazhin I Dobychi Nefti VNPO "Potentsial" : *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Spivack, John D.; and Ravichandran, Ramanathan, to Ciba-Geigy Corporation. Substituted dibenzo dioxaphosphepins and dioxaphosphocins as stabilizers. 4,605,692, Cl. 524-117.000.

Sprang, Richard W., to Clevepak Corporation. Seal means for a flush valve assembly. 4,604,763, Cl. 4-391.000.

Springston, Preston S.; and Claxton, Richard L., to United States of America, Navy. Expedient runway surfacing with post tensioning system for expeditionary airfields. 4,605,337, Cl. 404-35.000.

Sprintschnik, Gerhard: *See—*
Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, 4,605,480, Cl. 204-211.000.

SRI International: *See—*
Roberts, Daryl L.; and Laine, Richard M., 4,605,475, Cl. 204-130.000.

St Sensortechnik AG: *See—*
Kagi, Bruno, 4,604,901, Cl. 73-731.000.

Stahl, Glenn L.: *See—*
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,605,514, Cl. 530-307.000.
Orlowski, Ronald C.; and Stahl, Glenn L., 4,605,515, Cl. 530-307.000.

Stammler, Kurt: *See—*
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.

Stanadyne, Inc.: *See—*
Kelly, William W., 4,605,166, Cl. 239-96.000.

Standard Oil Company, The: *See—*
Boos, Donald L., 4,604,788, Cl. 29-570.000.
Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., 4,605,989, Cl. 361-433.000.

Standard Oil Company (Indiana): *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Windgassen, Richard J.; and Waynick, J. Andrew, 4,605,507, Cl. 252-45.000.

Stanley Works, The: *See—*
Remington, John L.; and Boyer, Jon A., 4,604,838, Cl. 52-73.000.

Stanner, Donald: *See—*
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, 4,605,216, Cl. 271-18.300.

Stanton, David B.: *See—*
Billig, Ernst; and Stanton, David B., 4,605,780, Cl. 568-454.000.

Stanton, Douglas A., to North American Philips Corporation. Blackened optical transmission system. 4,605,283, Cl. 350-127.000.

State of Israel, Ministry of Defense, Rafael Armament Auth.: *See—*
Tehori, Ahikam, 4,605,916, Cl. 333-245.000.

State of Israel, Prime Minister's Office, Atomic Energy Commission: *See—*
Buchman, Ouri; and Pri-Bar, Ilan, 4,605,749, Cl. 549-70.000.

Stauffer Chemical Company: *See—*
DiSalvo, Anthony L.; and Tsai, Chung-Chieh, 4,605,711, Cl. 525-438.000.
Leone-Bay, Andrea, 4,605,755, Cl. 560-101.000.
Robbins, Jeffery D., 4,605,522, Cl. 260-502.50F.

Stauffer, John E. Low volatile fluorine process for making elemental phosphorus. 4,605,540, Cl. 423-322.000.

Staver Company, Inc., The: *See—*
Wilens, Seymour, 4,605,058, Cl. 165-80.200.

Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., to General Motors Corporation. Bridge rectifier. 4,606,000, Cl. 363-145.000.

Stenger, Antoine: *See—*
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.

Stenger, Donald D.; and Coulahan, John F., to General Dynamics Corporation/Convair Div. Cold welded joint. 4,605,156, Cl. 228-127.000.

Stenkvist, Sven-Einar: *See—*
Lassander, Erik; and Stenkvist, Sven-Einar, 4,606,055, Cl. 373-108.000.

Stenmark, Lars. Spectral discrimination pyrometer. 4,605,314, Cl. 374-127.000.

Stephan, Karl. Pile splice. 4,605,340, Cl. 405-252.000.

Stephens, David C.; and Morgan, Craig D. Spinal stabilizer. 4,604,995, Cl. 128-69.000.

Stephenson, Martin F., to Boeing Company, The. Wing flap mechanism. 4,605,187, Cl. 244-216.000.

Sterling Drug Inc.: *See—*
Riley, Derek C.; and Johnston, David, 4,605,517, Cl. 540-52.000.

Sterritt, David W.: *See—*
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, 4,604,964, Cl. 118-50.000.

Stevens, Erik; and Van Hoeyveld, Ernestina M., to Tetra Consultants, Inc. Method of producing allergenic extracts. 4,605,557, Cl. 424-91.000.

Stevens, Robert W.; and Markovitz, Mark, to General Electric Company. Method of treating a carbon current collection brush blank and brush resulting therefrom. 4,605,581, Cl. 428-96.000.

Stevenson, James C.: *See—*
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.

Stewart, Clare A., Jr.: *See—*
Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., 4,605,800, Cl. 570-228.000.

Stewart-Warner Corporation: *See—*
Johnson, Myron J.; and Kao, Mark C. C., 4,605,039, Cl. 137-460.000.

Stichting Rega VZW: *See—*
Holy , Antonin; and de Clercq, Erik, 4,605,658, Cl. 514-261.000.

Stokoe, Philip T., to Augat Inc. Locking tool for manipulation of electronic components. 4,605,256, Cl. 294-99.200.

Storey, Robert W.: *See—*
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.

Streifer, William: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,606,032, Cl. 372-38.000.

Strobel, Rolf: *See—*
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, to Hoechst Aktiengesellschaft. Device for continuously anodically oxidizing aluminum strips on one surface thereof and use of these aluminum strips in the production of offset printing plates. 4,605,480, Cl. 204-211.000.

Strowik, Willibald: *See—*
Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, 4,605,192, Cl. 248-394.000.

Sturdy, Harry D., to Sturdy Truck Equipment, Inc. Road and engine speed governor with linear actuator. 4,604,976, Cl. 123-361.000.

Sturdy Truck Equipment, Inc.: *See—*
Sturdy, Harry D., 4,604,976, Cl. 123-361.000.

Sturgeon, Gerald E.; and Derman, Robert I., to General Electric Company. Rotary compressor and method of assembly. 4,605,362, Cl. 418-63.000.

Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, to Fujitsu Limited. Phone conference system. 4,605,823, Cl. 179-18.0BC.

Sugihara, Kunio: *See—*
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

Sugiki, Mikio; and Watanabe, Kenjiro, to Sony Corporation. Optical recording medium. 4,606,018, Cl. 369-279.000.

Sugimura, Kimio: *See—*
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, 4,605,917, Cl. 335-128.000.

Sugita, Hiroshi; and Hiramitsu, Tetsushi, to Toyoda Gosei Co., Ltd. Steering wheel. 4,604,912, Cl. 74-484.00R.

Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, to Daido Tokushuko Kabushiki Kaisha. Reactor iron making. 4,605,437, Cl. 75-43.000.

Sugiyama, Yoshihide: *See—*
Onishi, Tetsuo; and Sugiyama, Yoshihide, 4,605,926, Cl. 340-825.300.

Suhara, Yasuji: *See—*
Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, 4,605,674, Cl. 514-685.000.

Suiter, Weyman B., Jr.: *See—*
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.

Suk, Young J. Golf club head covers. 4,605,050, Cl. 150-52.00G.

Sukharevsky, Boris P., to Huck Manufacturing Company. Automated installation tool for blind fasteners. 4,604,889, Cl. 72-391.000.

Sukup, Eugene G. Drying bin floor. 4,604,842, Cl. 52-263.000.

Sulzer-Escher Wyss AG: *See—*
Lehmann, Rolf; and Christ, Alfred, 4,605,366, Cl. 425-143.000.

Sumi, Akiyasu, to Canon Kabushiki Kaisha. Motor built-in lens mounting. 4,605,286, Cl. 350-429.000.

Sumida, Akio, to Kawachi Aluminium Casting Co., Ltd. Casting apparatus including a conductor for electromagnetic induction heating. 4,605,054, Cl. 164-147.100.

Sumitomo Chemical Company, Limited: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,605,706, Cl. 525-340.000.
Matsuda, Teruo; Shimizu, Shinkichi; and Iwasa, Masaaki, 4,605,779, Cl. 568-450.000.
Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, 4,605,857, Cl. 250-372.000.
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kudoh, Kazunao; and Hashimoto, Yoshikazu, 4,605,533, Cl. 428-622.000.
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,860, Cl. 57-9.000.
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,861, Cl. 57-9.000.

Sumitomo Light Metal Industries, Ltd.: *See—*
Baba, Yoshio; and Tsuchida, Shin, 4,605,448, Cl. 148-11.50A.

Summers, James B., Jr., to Abbott Laboratories. Lipoxygenase inhibiting naphthohydroxamic acids. 4,605,669, Cl. 514-575.000.

Sumoto, Kunihiro: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.

Sun Star Kabushiki Kaisha: *See—*
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

Sunbeam Corporation: *See—*
Cockroft, James B., 4,605,883, Cl. 318-312.000.

Sundberg, Jack G.; and Haynes, Paul L., Jr., to Chandler Evans Inc. High thrust capacity shaft seal assembly for fuel pumps. 4,605,235, Cl. 277-87.000.

Sunds Defibrator AB: *See—*
Cederquist, Karl N., 4,604,957, Cl. 110-238.000.

Sundstrand Corporation: *See—*
Burandt, Wesley A., 4,605,358, Cl. 417-236.000.
Walsh, Richard E., 4,605,363, Cl. 418-131.000.

Sunrise Meisei Corporation: *See—*
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.

Suntory Ltd.: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.

Superior Walls of America, Ltd.: *See—*
Zimmerman, Melvin M., 4,605,529, Cl. 264-263.000.

Supplee, Frank H., Jr.: *See—*
Tcheng, Ping; and Supplee, Frank H., Jr., 4,604,903, Cl. 73-862.040.

Surgidev Corporation: *See—*
Grendahl, Dennis T., 4,605,410, Cl. 623-6.000.

Sutton, Noel W.: *See—*
Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., 4,605,384, Cl. 464-111.000.

Suyama, Tadakazu: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Suzuki, Hajime: *See—*
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, 4,605,591, Cl. 428-332.000.

Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, to Nippondenso Co., Ltd. Radial plunger pump. 4,605,359, Cl. 417-270.000.

Suzuki, Masanori: *See—*
Miyoshi, Kenichi; Suzuki, Masanori; and Fuwa, Toru, 4,605,735, Cl. 536-27.000.

Suzuki, Mikio: *See—*
Honaga, Susumu; and Suzuki, Mikio, 4,605,085, Cl. 180-143.000.

Suzuki, Shigeharu: *See—*
Araoka, Toshinobu; and Suzuki, Shigeharu, 4,605,497, Cl. 210-111.000.

Suzuki, Shoichi: *See—*
Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, 4,605,168, Cl. 239-112.000.

Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, to Nissan Motor Company, Limited. Data transmission/reception network system. 4,606,022, Cl. 370-85.000.

Suzuki, Toshio, to Toray Silicone Co., Ltd. Method for suppressing the generation of hydrogen gas from cured silicone materials. 4,605,722, Cl. 528-15.000.

Suzumura, Masanaga: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Swartout, James J.; and Scott, William D. Stair step routing template. 4,605,048, Cl. 144-136.00B.

Swartwood, James M. Reversible expansible chamber hydraulic pump. 4,605,360, Cl. 417-518.000.

Swoboda, Johann: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Syntex Pharmaceuticals International Ltd.: *See—*
Schloemer, George C., 4,605,758, Cl. 562-418.000.

Syntex (U.S.A.) Inc.: *See—*
Khanna, Pyare, 4,605,754, Cl. 560-19.000.
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.

Syracuse University: *See—*
Dunham, Philip B.; and Weissmann, Gerald, 4,605,618, Cl. 435-29.000.

Sytwu, Iou-Iou: *See—*
Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, 4,605,641, Cl. 514-12.000.

Szappanos, Adam: *See—*
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Szeberenyi, Szabolcs: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Szeger, Annie M.: *See—*
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.

Szporny, Laszlo : *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Tabata, Norikazu: *See—*
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.

Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Rotating spraying type coating apparatus with wash shroud. 4,605,168, Cl. 239-112.000.

Tada, Kuniyuki: *See—*
Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, 4,605,799, Cl. 570-211.000.

Taiho Kogyo Co., Ltd.: *See—*
Nakamura, Masao, 4,605,458, Cl. 156-164.000.

Tait, Robert C.: *See—*
Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., 4,605,627, Cl. 435-317.000.

Tajima, Eiichi: *See—*
Kidokoro, Susumu; and Tajima, Eiichi, 4,605,463, Cl. 156-247.000.

Tajima Oyo Kako Kabushiki Kaisha: *See—*
Kidokoro, Susumu; and Tajima, Eiichi, 4,605,463, Cl. 156-247.000.

Takabayashi, Katsuyuki: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.

Takada, Isao: *See—*
Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, 4,604,887, Cl. 72-368.000.

Takahashi, Hiroshi: *See—*
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Fungicidal carbamate compounds. 4,605,668, Cl. 514-485.000.

Takahashi, Katsumasa, to Kitagawa Industries Co., Ltd. Spacer for mounting boards. 4,604,776, Cl. 24-453.000.

Takahashi, Kenji: *See—*
Nakamura, Takashi; and Takahashi, Kenji, 4,605,861, Cl. 250-484.100.

Takahashi, Yasuie: *See—*
Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, 4,605,109, Cl. 192-4.00C.

Takai, Haruki, to NEC Corporation. Receive data processing device for TDMA satellite communications network. 4,606,019, Cl. 370-13.000.

Takano, Toshio, to Fuji Jukogyo Kabushiki Kaisha; and Van Doorne's Transmissie B.V. Control system for an infinitely variable transmission with an electromagnetic powder clutch. 4,605,112, Cl. 192-0.033.

Takasago Perfumery Co., Ltd.: *See—*
Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,605,750, Cl. 556-7.000.

Takasu, Hiromi: *See—*
Ishii, Toshihiko; and Takasu, Hiromi, 4,605,944, Cl. 357-17.000.

Takayanagi, Takashi: *See—*
Asao, Yasuzi; and Takayanagi, Takashi, 4,605,612, Cl. 430-538.000.

Takeda, Shigekazu. Detectable card and entry and departure checking apparatus utilizing the same. 4,605,845, Cl. 235-382.000.

Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, to Mitsubishi Rayon Co., Ltd. Hollow-fiber filter module. 4,605,500, Cl. 210-321.100.

Takeshita, Kaneyoshi, to Sony Corporation. Solid state image pickup apparatus. 4,605,862, Cl. 250-578.000.

Takeshita, Tsuneichi, to Du Pont de Nemours, E. I., and Company. Heat resistant sulfur-modified polychloroprene copolymers. 4,605,705, Cl. 525-330.900.

Takeuchi, Hiroaki: *See—*
Ando, Masamoto; Takeuchi, Hiroaki; Yamada, Toyohisa; and Yamanaka, Toshihiko, 4,605,263, Cl. 303-116.000.

Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, to Nippondenso Co., Ltd. Amorphous silicon solar battery. 4,605,813, Cl. 136-244.000.

Takeuchi, Yukihisa: *See—*
Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, 4,604,869, Cl. 60-311.000.

Takeuchui, Yoshinori: *See—*
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Takizawa, Shozo: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Tamai, Yasuo: *See—*
Ogawa, Hiroshi; and Tamai, Yasuo, 4,605,597, Cl. 428-522.000.

Tamaki, Satoshi: *See—*
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.

Tammen, James F.: *See—*
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., 4,604,824, Cl. 47-1.00A.

Tanaka, Katsuyuki: *See—*
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Tanaka, Kazumi: *See—*
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.

Tanaka, Masaaki: *See—*
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.

Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Vehicle suspension apparatus. 4,605,244, Cl. 280-707.000.

Taniguchi, Yasutaka: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Tanimoto, Hirotoshi: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Tantallon Halifax Co.: *See—*
Covill, Dennis H., 4,605,910, Cl. 332-9.00R.

Taoka Chemical Company, Limited: *See—*
Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, 4,605,442, Cl. 106-22.000.

Taragna, Luigi; and Giovannelli, Antonio, to Italcaps S.p.A. Bottle cap. 4,605,137, Cl. 215-254.000.

Taragna, Luigi; and Giovannelli, Antonio, to Italcaps S.p.A. Bottle cap. 4,605,138, Cl. 215-254.000.

Tarvin, Robert F.: *See—*
Guerro, Gerald J.; Proverb, Robert J.; and Tarvin, Robert F., 4,605,702, Cl. 525-154.000.

Taschner, Edwin C.; and Myzska, Edward M., to United States of America, Air Force. Rotor blade test apparatus. 4,604,896, Cl. 73-583.000.

Tatemichi, Shinichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Operating method for nuclear power plants. 4,605,530, Cl. 376-237.000.

Tatemoto, Minoru: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Tau, Kwoliang D., to Celanese Corporation. Production of 2-methylbutanal. 4,605,781, Cl. 568-454.000.

Taub Family Trust: *See—*
Taub, Ronald H., 4,605,130, Cl. 211-59.200.

Taub, Ronald H., to Taub Family Trust. Article display stand with self-feeding hopper. 4,605,130, Cl. 211-59.200.

Taworski, Andre : *See—*
Petitcollin, Jean-Marc; and Taworski, Andre , 4,605,528, Cl. 264-216.000.

Taylor, Rita L.: *See—*
LaForest, Lance J.; and Taylor, Rita L., 4,605,412, Cl. 623-8.000.

Tcheng, Ping; and Supplee, Frank H., Jr., to United States of America, Administrator, National Aeronautics & Space Administration. Two-axis, self-nulling skin friction balance. 4,604,903, Cl. 73-862.040.

Tchitdjian, John K., to Garland Commercial Ranges Limited. Float valve control. 4,605,038, Cl. 137-399.000.

Tehori, Ahikam, to State of Israel, Ministry of Defense, Rafael Armament Auth. Transverse electromagnetic cells adapted for electromagnetic pulse testing. 4,605,916, Cl. 333-245.000.

Teijin Limited: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Tektronix, Inc.: *See—*
Hawkins, Jeffrey A., 4,605,970, Cl. 358-265.000.
Penney, Bruce J., 4,605,868, Cl. 307-351.000.
Rath, Dale R., 4,605,879, Cl. 313-407.000.

Teledyne Industries, Inc.: *See—*
Barbeau, Dennis E., 4,605,101, Cl. 184-6.110.
Penrice, Thomas W.; and Bost, James, 4,605,599, Cl. 428-665.000.
Rosenthal, Bruce D.; and Gray, Richard L., 4,605,907, Cl. 330-257.000.

Teledyne Penn-Union: *See—*
Martin, William C., 4,604,890, Cl. 72-453.160.

Telewe', Inc.: *See—*
Clem, William E.; and Trethewey, William C., 4,605,240, Cl. 280-236.000.

Temtec Inc.: *See—*
Haas, David J.; and Autote, Alexander J., 4,605,246, Cl. 282-29.00A.

Tenjin, Nobuyoshi: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.

Teramachi, Hiroshi. Recirculating-ball rotary-to-linear converter with an improved ball return guide. 4,604,911, Cl. 74-424.80R.

Terano, Hiroshi: *See—*
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Teraoka Seiko Co., Ltd.: *See—*
Matsuura, Yoshikazu, 4,605,082, Cl. 177-25.000.

Terashima, Kazutaka; and Fukuda, Tsuguo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Apparatus for manufacturing semiconductor single crystal. 4,606,037, Cl. 373-6.000.

Terhune, James H., to General Electric Company. Personal radiation dosimeter. 4,605,858, Cl. 250-374.000.

Terlouw, Teunis: *See—*
Scott, Andrew M.; Quist, Bernardus B.; and Terlouw, Teunis, 4,605,352, Cl. 414-217.000.

Terry, Kenneth A.: *See—*
Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., 4,605,937, Cl. 346-76.0PH.

Tesa S.A.: *See—*
Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, 4,604,808, Cl. 33-143.00M.

Tetenbaum, Marvin T.: *See—*
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.

Tetra Consultants, Inc.: *See—*
Stevens, Erik; and Van Hoeyveld, Ernestina M., 4,605,557, Cl. 424-91.000.

Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,604,850, Cl. 53-423.000.

Teumer, Henry E. Check valve. 4,605,041, Cl. 137-527.000.

Texaco Development Corporation: *See—*
Koog, Wolfgang, 4,605,423, Cl. 48-69.000.

Texaco Inc.: *See—*
Knifton, John F., 4,605,677, Cl. 518-700.000.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,605,688, Cl. 523-218.000.

Texas Instruments Incorporated: *See—*
DeFilippis, Pietro; Salvatore, Amedeo; and Biscione, Mario, 4,605,277, Cl. 339-262.00R.
Shih, Hung-Dah; and Bennett, Tommy J., 4,605,469, Cl. 156-610.000.

Textron Inc.: *See—*
DeCaro, Charles J., 4,605,348, Cl. 408-239.00A.

Thaddey, Kurt, to Prontophot Holding AG. Device for exposing and separating photographic strip-material for the production of marginless copies. 4,605,300, Cl. 355-29.000.

Thakur, Manmohan S.: *See—*
Godrej, Nadir B.; and Thakur, Manmohan S., 4,605,430, Cl. 71-23.000.

Thatcher, Jerry T.: *See—*
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.

Thomas, Bruno; and Viart, Guy, to Fils et Cables D'Acier de Lens (Fical). Steel wire having superposed coatings resisting corrosion. 4,605,598, Cl. 428-659.000.

Thomas, Gary S.: *See—*
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.

Thomas, George T.: *See—*
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.

Thomas, Ian M.; and Tillman, James J., to Owens-Illinois, Inc. Process for forming a doped oxide film and doped semiconductor. 4,605,450, Cl. 148-188.000.

Thomas Jefferson University: *See—*
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.

Thomas, John M.: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.

Thomas, Palmer D.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.

Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., to Allied Corporation. Fluorochemical composition for coating soil resistant yarn. 4,605,587, Cl. 428-265.000.

Thompson, Arnold R., to Morton Thiokol, Inc. Actuator device. 4,605,104, Cl. 188-72.400.

Thompson, Levi T.: *See—*
Curtis, M. David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, 4,605,751, Cl. 556-29.000.

Thompson, Patricia A.; and Wood, Dot M. Permanent wave cape. 4,605,017, Cl. 132-1.00R.

Thompson, Richard J.: *See—*
Hoffmeister, Lawrence D.; and Thompson, Richard J., 4,604,939, Cl. 89-1.816.

Thompson, Robert A., to General Electric Company. Method and apparatus for optimizing grinding. 4,604,834, Cl. 51-165.710.

Thomson CSF: *See—*
Eumurian, Gregoire; and Levan, Jean-Pol, 4,605,899, Cl. 324-258.000.

Thoratec Laboratories Corporation: *See—*
Robinson, Thomas C., 4,604,762, Cl. 62-1.000.

Thornburgh, William F., to General Motors Corporation. Insulated engine air cleaner. 4,605,426, Cl. 55-267.000.

Thurner, Hans, to Bayrisches Druckgusswerk Thurner GmbH & Co. KG. Apparatus for wetting mold surfaces with a liquid. 4,605,170, Cl. 239-444.000.

Tillery, Arthur M.: *See—*
Farrens, Eldon F.; and Tillery, Arthur M., 4,605,149, Cl. 227-7.000.

Tillery, Elinor E.: *See—*
Farrens, Eldon F.; and Tillery, Arthur M., 4,605,149, Cl. 227-7.000.

Tillman, James J.: *See—*
Thomas, Ian M.; and Tillman, James J., 4,605,450, Cl. 148-188.000.

Tiltscher, Helmut; Wolf, Helmut; Schelchshorn, Joachim; and Dialer, Kurt. Process for restoring or maintaining the activity of heterogeneous catalysts for reactions at normal and low pressures. 4,605,811, Cl. 585-670.000.

Timoshin, Jury V.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Tindale, Wendy B.: *See—*
Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., 4,605,407, Cl. 623-2.000.

Tobin, Philip J.: *See—*
Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., 4,605,947, Cl. 357-23.150.

Tocom Inc.: *See—*
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.

Todd, Terry J. M.; and Vulakovic, Josip, to Papaiz of Canada Limited. Latch actuator cam of door locks. 4,604,878, Cl. 70-139.000.

Todorof, William J. Method for producing multi-layer, thin-film, flexible silicon alloy photovoltaic cells. 4,604,791, Cl. 29-581.000.

Tofield, Robert H.: *See—*
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.

Tohira, Hiroyuki: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.

Tokai Rubber Industries, Ltd.: *See—*
Konishi, Keizo, 4,605,207, Cl. 267-57.10R.

Tokan Kogyo Co., Ltd.: *See—*
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, 4,605,142, Cl. 220-359.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Komuro, Isaku; Sano, Yoshikazu; and Shibata, Shinichi, 4,605,825, Cl. 179-99.00R.
Nakamura, Masaru; Nitsuta, Kouichi; and Ozeki, Takeshi, 4,605,943, Cl. 357-17.000.
Oida, Yoshio, 4,606,059, Cl. 377-47.000.
Ramamurti, Krishnamurti, 4,606,061, Cl. 378-10.000.
Rung, Robert D., 4,605,872, Cl. 307-465.000.
Saito, Shozo, 4,606,010, Cl. 365-149.000.
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Tatemichi, Shinichiro, 4,605,530, Cl. 376-237.000.

Tomiie, Kazuo: *See—*
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Tomikashi, Minoru: *See—*
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.

Tomita, Masao: *See—*
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, 4,605,974, Cl. 360-62.000.

Tommasini, Rocco M.: *See—*
Kokoszka, Joseph M.; and Tommasini, Rocco M., 4,605,315, Cl. 374-144.000.

Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,605,624, Cl. 435-253.000.

Tonsor, Andrew J., to Caterpillar Inc. Track shoe deflection stop for endless track assemblies. 4,605,264, Cl. 305-47.000.

Tools & Machinery Builders, Inc.: *See—*
Cook, Ronald, 4,605,391, Cl. 493-159.000.

Toray Industries, Inc.: *See—*
Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, 4,605,799, Cl. 570-211.000.

Toray Silicone Co., Ltd.: *See—*
Suzuki, Toshio, 4,605,722, Cl. 528-15.000.

Torgrimson, Donald L., to Main Electric Construction, Inc. Wire reel carriage. 4,605,237, Cl. 280-47.240.

Torii, Masakatsu, to Saitama Kako Co., Ltd. Exercise apparatus. 4,605,224, Cl. 272-146.000.

Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Torrington Company, The: *See—*
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.

Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Diethylaminoalkoxybenzhydrol derivatives, process for their preparation and pharmaceutical compositions containing them. 4,605,672, Cl. 514-648.000.

Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar RT. 1,1-diphenylpropanol derivatives, process for their preparation and pharmaceutical compositions containing them. 4,605,785, Cl. 568-649.000.

Tottori Sanyo Electric Co., Ltd.: *See—*
Ishii, Toshihiko; and Takasu, Hiromi, 4,605,944, Cl. 357-17.000.

Toudo, Kenzi; Yiyanaka, Motoshi; and Hayata, Yoshiki, to Hitachi, Ltd. Digital control circuit. 4,605,863, Cl. 307-269.000.

Touro, Freddie J., to Freeport Minerals Company. Sulfide as a hypochlorite kill agent. 4,605,537, Cl. 423-29.000.

Toutain, Serge: *See—*
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, 4,605,012, Cl. 128-804.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, 4,605,591, Cl. 428-332.000.
Toyo Denki Kogyosho Co., Ltd.: *See—*
Araoka, Toshinobu; and Suzuki, Shigeharu, 4,605,497, Cl. 210-111.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, 4,605,615, Cl. 435-16.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, 4,605,142, Cl. 220-359.000.
Toyoda Gosei Co., Ltd.: *See—*
Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,604,912, Cl. 74-484.00R.
Toyoda Koki Kabushiki Kaisha: *See—*
Honaga, Susumu; and Suzuki, Mikio, 4,605,085, Cl. 180-143.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, 4,605,109, Cl. 192-4.00C.
Sakakibara, Yozo; and Okamoto, Yuji, 4,605,260, Cl. 296-201.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,604,829, Cl. 49-352.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kyonomine, Masaru, 4,604,913, Cl. 74-540.000.
Trachte, Dietrich; and Giess, Helmut, to Robert Bosch GmbH. Fuel injector having fuel-filled damping chamber. 4,605,171, Cl. 239-453.000.
Transamerica Delaval Inc.: *See—*
Silvers, Ralph H., Jr., 4,604,787, Cl. 29-568.000.
Travis, James, to University of Georgia Research Foundation, Inc. Determination of oxidized α-1-proteinase inhibitor in serum or plasma. 4,605,616, Cl. 435-23.000.
Tremblay, Gregory D. Method and apparatus for application of artificial fingernails. 4,605,024, Cl. 132-88.500.
Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.
Treskot, Robert A.: *See—*
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.
Trethewey, William C.: *See—*
Clem, William E.; and Trethewey, William C., 4,605,240, Cl. 280-236.000.
Trevarrow, David J., to Schrader Machine & Tool, Inc. Tool wear compensator. 4,605,346, Cl. 408-147.000.
Trieschmann, Christa: *See—*
Muller, Johann; Trieschmann, Christa; and Preiner, Gerhard, 4,605,567, Cl. 427-54.100.
Trill, Anthony J., to A. H. Robins Company, Inc. Delayed release formulations and processes for making them. 4,605,550, Cl. 424-22.000.
Triumph Adler AG: *See—*
Hofmann, Norbert, 4,605,325, Cl. 400-207.000.
Troxel, Tim L., to Wikco Industries, Inc. Ankle exerciser. 4,605,220, Cl. 272-96.000.
TRW Inc.: *See—*
Miller, Chauncey S., 4,606,045, Cl. 375-13.000.
Tsai, Chung-Chieh: *See—*
DiSalvo, Anthony L.; and Tsai, Chung-Chieh, 4,605,711, Cl. 525-438.000.
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., to Allied Corporation. Method of manufacturing a friction article. 4,605,595, Cl. 428-413.000.
Tseo, Gus G.; and Fitzwater, Dennis L., to Warner-Lambert Company. Gravity flow cassette with rotary valve. 4,605,396, Cl. 604-32.000.
Tsernes, Vladimir Y.: *See—*
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.
Tsipenyuk, Pyotr; and Kober, Marvin, to O.K. Industries Inc. IC extractor tool. 4,604,796, Cl. 29-764.000.
Tsironis, Christos, to U.S. Philips Corporation. Dual gate FET oscillator mixer. 4,605,909, Cl. 331-96.000.
Tsubai, Yasuo: *See—*
Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, 4,605,609, Cl. 430-232.000.
Tsubakimoto Chain Company: *See—*
Nagano, Satoshi; and Sakai, Masanori, 4,605,388, Cl. 474-152.000.
Tsubouchi, Kaoru, to Aisin Seiki Kabushiki Kaisha. Housing of pneumatic booster device. 4,604,944, Cl. 92-98.00D.
Tsuchida, Shin: *See—*
Baba, Yoshio; and Tsuchida, Shin, 4,605,448, Cl. 148-11.50A.
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, to Hino Jidosha Kogyo Kabushiki Kaisha; and Marusan Packing Manufacturing Co. Cylinder head gasket construction. 4,605,236, Cl. 277-235.00B.
Tsuda, Yoshio: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Tsudakoma Corp.: *See—*
Sakano, Toshiyuki, 4,605,044, Cl. 139-304.000.
Tsuno, Kazuhiko; and Sano, Nitiro, to Asahi Yukizai Kogyo Co., Ltd. Ball valve. 4,605,202, Cl. 251-315.000.
Tsurukawa, Ikuya: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,605,295, Cl. 354-154.000.
Tsuruta, Masahiko: *See—*
Ito, Takeyoshi; and Tsuruta, Masahiko, 4,605,976, Cl. 360-70.000.
Tsutsumi, Syuitsu: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Tucker, J. Camille, to Hibril, Dalal. Sanitary napkin disposal system. 4,605,403, Cl. 604-385.100.
Tung, William C. T., to Goodyear Tire & Rubber Company, The. High strength copolyester. 4,605,728, Cl. 528-289.000.
Tunnicliffe, Robert W.; and Leighton, John M. H., to Ventrolla Limited. Reduction of draughts through sliding sash windows. 4,604,831, Cl. 49-434.000.
Turetsky, Isadore. Controlling and switching mechanism. 4,604,982, Cl. 123-477.000.
Tuske, Marton: *See—*
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.
Tutman, Stanley W.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Twinoak Products, Inc.: *See—*
Meloy, Gilbert K., 4,605,534, Cl. 422-37.000.
Tyson, James E. Flow divider for distribution systems. 4,605,501, Cl. 210-519.000.
Uba, Tomohisa: *See—*
Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, 4,605,878, Cl. 313-406.000.
Ube Industries, Ltd.: *See—*
Honda, Masahiro, 4,604,928, Cl. 83-151.000.
Uchibori, Takahiro: *See—*
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, to Murata Kikai Kabushiki Kaisha. Bobbin transporting and treating system. 4,605,177, Cl. 242-35.50A.
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, to Hitachi, Ltd. Apparatus for continuously pressure-feeding slurry. 4,605,356, Cl. 417-102.000.
Uchiyama, Takako: *See—*
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.
Ueki, Junzo; and Nakajima, Yoshiaki, to Silver Seiko Ltd. Print ribbon cassette including ribbon tensioning means. 4,605,327, Cl. 400-208.000.
Ullmann, Roland; and Heintke, Hans E., to Braun Aktiengesellschaft. Shaver with insertable auxiliary frame. 4,604,801, Cl. 30-43.920.
Ulmer, Harry E.: *See—*
Reimschuessel, Herbert K.; and Ulmer, Harry E., 4,605,707, Cl. 525-410.000.
Ultrasons Annemasse: *See—*
Dallot, Mario, 4,605,027, Cl. 134-108.000.
Ulveling, Leon: *See—*
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, 4,605,342, Cl. 406-129.000.
Unicell Limited: *See—*
Muirhead, Allen D., 4,605,852, Cl. 250-231.00R.
Union Carbide Corporation: *See—*
Billig, Ernst; and Stanton, David B., 4,605,780, Cl. 568-454.000.
Goddard, Errol D.; and Leung, Pak S., 4,605,422, Cl. 44-51.000.
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,605,492, Cl. 208-310.00Z.
Rao, Chennupati K.; and D'Silva, Themistocles D., 4,605,667, Cl. 514-477.000.
Uniprode: *See—*
Inglese, Giulio S., 4,605,100, Cl. 182-213.000.
Uniroyal Chemical Company, Inc.: *See—*
Malz, Russell E., Jr.; and Greenfield, Harold, 4,605,743, Cl. 546-186.000.
United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Duesberg, Joseph D.; and Mills, Raymond C., Sr., 4,605,155, Cl. 228-119.000.
Administrator, National Aeronautics & Space Administration: *See—*
Tcheng, Ping; and Supplee, Frank H., Jr., 4,604,903, Cl. 73-862.040.
Agriculture: *See—*
Fanta, George F.; and Doane, William M., 4,605,640, Cl. 502-402.000.
Air Force: *See—*
Jin, Korda K., 4,605,911, Cl. 333-144.000.
Taschner, Edwin C.; and Myzska, Edward M., 4,604,896, Cl. 73-583.000.
Army: *See—*
Everett, Seth L., Jr., 4,605,326, Cl. 400-201.000.

Hoffmeister, Lawrence D.; and Thompson, Richard J., 4,604,939, Cl. 89-1.816.
Long, James R.; and Kerr, James A., 4,604,798, Cl. 29-764.000.
Ruffin, Paul B., 4,606,020, Cl. 370-3.000.
Energy: *See—*
Beene, James R.; and Bemis, Curtis E., Jr., 4,606,031, Cl. 372-28.000.
Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., 4,606,030, Cl. 372-5.000.
Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., 4,605,440, Cl. 75-238.000.
National Aeronautics and Space Administration: *See—*
Haines, Richard F., 4,605,303, Cl. 356-73.000.
Mikulas, Martin M., Jr.; and Rhodes, Marvin D., 4,604,844, Cl. 52-632.000.
Robinson, Paul A., Jr., 4,605,946, Cl. 357-23.100.
Navy: *See—*
Butscher, Frank D.; and Gegan, Michael J., 4,605,932, Cl. 343-700.0MS.
Butscher, Frank D., 4,605,933, Cl. 343-700.0MS.
Daniel, Richard A., 4,606,049, Cl. 375-45.000.
Kennedy, Robert E.; and Neef, James D., 4,604,938, Cl. 89-1.800.
Springston, Preston S.; and Claxton, Richard L., 4,605,337, Cl. 404-35.000.
U.S. Philips Corporation: *See—*
Baggen, Constant P. M. J., 4,606,026, Cl. 371-39.000.
Broer, Dirk J.; and Vriens, Leendert, 4,606,017, Cl. 369-275.000.
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., 4,605,447, Cl. 148-1.500.
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., 4,606,040, Cl. 375-1.000.
Hajj-Chehade, Mohammed, 4,605,904, Cl. 329-50.000.
Moore, Michael J.; and Paxman, David H., 4,605,949, Cl. 357-71.000.
Seevinck, Evert; and Van Tuijl, Adrianus J. M., 4,605,892, Cl. 323-315.000.
Tsironis, Christos, 4,605,909, Cl. 331-96.000.
van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, 4,606,057, Cl. 377-28.000.
Veehof, Johannus C. D. M., 4,605,867, Cl. 307-351.000.
Wagenmakers, Johannes, 4,606,028, Cl. 371-49.000.
U.S. Product Development Company: *See—*
Adell, Robert, 4,604,832, Cl. 49-462.000.
United Technologies Corporation: *See—*
Gemma, Anthony E.; and Dierberger, James A., 4,605,452, Cl. 148-404.000.
Kokoszka, Joseph M.; and Tommasini, Rocco M., 4,605,315, Cl. 374-144.000.
Mayers, John L., 4,605,169, Cl. 239-265.290.
Universal Data Systems, Inc.: *See—*
Crabtree, Steven B.; Yedid, Harry; and Sherman, James B., 4,606,051, Cl. 375-86.000.
Universite Francois Rabelais: *See—*
Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, 4,605,009, Cl. 128-660.000.
Universite Pierre et Marie Curie Paris VI: *See—*
Carpentier, Alain, 4,605,408, Cl. 623-2.000.
Universite Rene Descartes (Paris V): *See—*
Rose, Christian S.; and Lacombe, Jacques, 4,605,395, Cl. 604-9.000.
University of Alabama at Birmingham, The: *See—*
Urry, Dan W.; and Senior, Robert M., 4,605,413, Cl. 623-11.000.
University of California, The Regents of the: *See—*
Ferrari, Leonard A., 4,605,008, Cl. 128-660.000.
Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., 4,605,627, Cl. 435-317.000.
Van Steenwyk, Robert A.; and Barnett, William W., 4,605,560, Cl. 424-195.100.
University of Georgia Research Foundation, Inc.: *See—*
Travis, James, 4,605,616, Cl. 435-23.000.
University of Michigan, The Regents of the: *See—*
Weber, Kathleen; and Benson, Joseph B., 4,604,773, Cl. 24-71.200.
University of Minnesota, Regents of the: *See—*
Foker, John E., 4,605,644, Cl. 514-45.000.
University of Sheffield, The: *See—*
Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., 4,605,407, Cl. 623-2.000.
UOP Inc.: *See—*
Zinnen, Hermann A., 4,605,783, Cl. 568-492.000.
Upmeier, Hartmut, to Windmoller & Holscher. Blowing head for making tubular plastic films. 4,605,365, Cl. 425-72.00R.
Urry, Dan W.; and Senior, Robert M., to University of Alabama at Birmingham, The. Stimulation of chemotaxis by chemotactic peptides. 4,605,413, Cl. 623-11.000.
Urushida, Yoshihisa, to Citizen Watch Co., Ltd. Gas flow control system for an anesthesia apparatus. 4,605,034, Cl. 137-88.000.
Usagawa, Toshiyuki: *See—*
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Ushio Denki Kabushiki Kaisha: *See—*
Kira, Takehiro, 4,605,301, Cl. 355-69.000.
Ushiyama, Keiichi; and Ichinose, Hisashi, to Nitto Electric Industrial Co., Ltd. Drug administration material. 4,605,548, Cl. 424-15.000.
USV Pharmaceutical Corp.: *See—*
Loev, Bernard; and Chan, Wan-Kit, 4,605,675, Cl. 514-720.000.
Utecht, Manfred, to Siemens Aktiengesellschaft. Flexibly damped shaft bearing arrangement, particularly for use in electrical machinery. 4,605,316, Cl. 384-99.000.
Uwani, Tetsuo: *See—*
Marui, Takao; and Uwani, Tetsuo, 4,604,794, Cl. 29-623.100.
Vale, Wylie W., Jr.: *See—*
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., 4,605,642, Cl. 514-12.000.
Valko, Joseph T.: *See—*
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., 4,605,478, Cl. 204-181.700.
Vallance, Leslie, to Burroughs Corporation. Self-aligning guillotine. 4,604,929, Cl. 83-524.000.
Van Doorne's Transmissie B.V.: *See—*
Takano, Toshio, 4,605,112, Cl. 192-0.033.
van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, to U.S. Philips Corporation. Arrangement for checking the counting function of counters. 4,606,057, Cl. 377-28.000.
Van Buskirk, Ellor J.: *See—*
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.
Van den Bergh, Armand M.: *See—*
Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, 4,605,613, Cl. 430-562.000.
Van Den Brekel, Jacques; and Ho, Thomas K. Y., to Northern Telecom Limited. Shaped solder pad for reflow soldering of surface mounting cylindrical devices on a circuit board. 4,605,153, Cl. 228-56.300.
Vanderlinde, Leendert A.; and Collier, Byron T., to Mid-West Conveyor Company, Inc. Shaft driven accumulation conveyor arrangement. 4,605,120, Cl. 198-781.000.
Vanderpool, Clarence D., to GTE Products Corporation. Production of pure molybdenum. 4,605,538, Cl. 423-55.000.
VanderPoorte, John G.: *See—*
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,605,595, Cl. 428-413.000.
van der Scheer, Albert: *See—*
Reynhout, Marinus J.; and van der Scheer, Albert, 4,605,526, Cl. 264-41.000.
Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, to Agfa-Gevaert, N.V. Ballasted dye compounds with linkages containing three aromatic nuclei for use in a dye diffusion transfer process and element. 4,605,613, Cl. 430-562.000.
Van Elven, Aris; and Overmars, Henricus G. J., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. Chromatographic separation of metals with polyetherurethane particles. 4,605,504, Cl. 210-656.000.
Van Hoeyveld, Ernestina M.: *See—*
Stevens, Erik; and Van Hoeyveld, Ernestina M., 4,605,557, Cl. 424-91.000.
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., to International Flavors & Fragrances Inc. Constant rate volatile composition dispensing article and process for using same. 4,605,165, Cl. 239-6.000.
van Rensburg, Philippus J.: *See—*
Baker, Rodney C.; and van Rensburg, Philippus J., 4,604,971, Cl. 119-86.000.
van Seumeren, Adelbert M. D. G. Lifting tool. 4,605,132, Cl. 212-185.000.
Van Steenwyk, Robert A.; and Barnett, William W., to University of California, The Regents of The. Ovipositional disruption of the navel orangeworm. 4,605,560, Cl. 424-195.100.
Van Tuijl, Adrianus J. M.: *See—*
Seevinck, Evert; and Van Tuijl, Adrianus J. M., 4,605,892, Cl. 323-315.000.
Van Uffelen, Jean-Pierre H.: *See—*
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Varadarajan, Hemmige D.; and Vasseghi, Nader, to Advanced Micro Devices, Inc. AFL (advanced fast logic) line driver circuit. 4,605,864, Cl. 307-270.000.
Varco International, Inc.: *See—*
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Vartuli, James C.: *See—*
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Vasseghi, Nader: *See—*
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Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.
Veb Metaplast Quedlinburg: *See—*
Kuhnert, Rudi; and Legall, Wolf-Dieter, 4,605,536, Cl. 422-99.000.
VEB Schwermaschinenbau Karl Liebknecht Magdeburg: *See—*
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.
Veehof, Johannus C. D. M., to U.S. Philips Corporation. Peak detector. 4,605,867, Cl. 307-351.000.
Venaleck, John T.: *See—*
Davis, Robert J.; Anspach, Charles R.; and Venaleck, John T., 4,605,355, Cl. 416-208.000.

Ventrolla Limited: *See*—
Tunnicliffe, Robert W.; and Leighton, John M. H., 4,604,831, Cl. 49-434.000.

Verboom, Johannes J.; and Bracht, Roger R., to Optical Storage International. Write protection and data detection using differential detector. 4,606,016, Cl. 369-54.000.

Vereczkey, Laszlo : *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.

Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., to Syntex (U.S.A.) Inc. Purinyl or pyrimidinyl substituted hydroxycyclopentane compounds useful as antivirals. 4,605,659, Cl. 514-262.000.

Vernitron Corporation: *See*—
Ogle, Dennis F.; Clark, Charles A., Jr.; and Aires, Ramon H., 4,605,890, Cl. 323-209.000.

Verot, Yvan: *See*—
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.

Verrando, Marcel G.; Duich, Michael B.; and Overton, Bradley T., to Pall Corporation. Heaterless dryer having variable cycle. 4,605,425, Cl. 55-20.000.

Verzemnieks, Juris: *See*—
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Vetter, Hans: *See*—
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Viart, Guy: *See*—
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Victor Company of Japan, Ltd.: *See*—
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Vidunas, Louis J.: *See*—
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Villanyi, Sigmund T.: *See*—
McCandless, Harry E.; and Villanyi, Sigmund T., 4,605,880, Cl. 313-414.000.

Vinup, Karl J. Demonstrator for teaching pressure blow forming of plastics. 4,605,374, Cl. 434-365.000.

VISA U.S.A. Inc.: *See*—
Campbell, Carl M., Jr., 4,605,820, Cl. 178-22.090.

Vittay, Pal: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.

Vliet, Walter C.: *See*—
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Voest-Alpine Aktiengesellschaft: *See*—
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Vogel, Victor J.: *See*—
Morano, Robert E.; Vogel, Victor J.; and Pawchak, Peter, 4,605,102, Cl. 186-37.000.

Voirin, Robert, to Societe Nationale Elf Aquitaine (Production). Catalytic process for the production of sulfur from a gas containing H_2S. 4,605,546, Cl. 423-576.000.

Voirol, Peter: *See*—
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Volkswagenwerk Aktiengesellschaft: *See*—
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Vollmer, Yolanda P.: *See*—
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Voltmer, Helmut; and Schwenzer, Alfred F., to New Jersey Machine Inc. Literature applying machine and method. 4,605,459, Cl. 156-215.000.

Volyansky, Igor I.: *See*—
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.

Von Kohorn, Henry. System, apparatus and method for recording and editing broadcast transmissions. 4,605,973, Cl. 358-335.000.

Vriens, Leendert: *See*—
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Vulakovic, Josip: *See*—
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W. R. Grace & Co.: *See*—
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Morgan, Charles R., 4,605,465, Cl. 156-273.300.

W. R. Grace & Co., Cryovac Div.: *See*—
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Wachi, Kiyoshi, to Macsea Marine Services Company, Inc. Apparatus for cleaning underwater surfaces. 4,604,960, Cl. 114-222.000.

Wacker-Chemie GmbH: *See*—
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Wada, Masashi; Watanabe, Shigeyoshi; and Masuoka, Fujio, to Kabushiki Kaisha Toshiba. Single transistor/capacitor semiconductor memory device and method for manufacture. 4,606,011, Cl. 365-149.000.

Waddell, Walter H., III: *See*—
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.

Waddill, Harold G.: *See*—
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Wagenmakers, Johannes, to U.S. Philips Corporation. Digital transmission system. 4,606,028, Cl. 371-49.000.

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Wahle, Gunter, to Hauni-Werke Korber & Co. KG. Machine for the production of smokers' products with cavities between their rod-shaped components. 4,605,014, Cl. 131-94.000.

Wahren, Mats E., to EWAB Ejvin Wahren AB. Arresting buffer for objects on conveyors. 4,605,121, Cl. 198-803.010.

Waisman, Amnon; and Weiss, Andrew M., to Wang Laboratories, Inc. B-tree structured data base using sparse array bit maps to store inverted lists. 4,606,002, Cl. 364-200.000.

Wakabayashi, Kouzo: *See*—
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Wakui, Natsuko: *See*—
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Wakunaga Seiyaku Kabushiki Kaisha: *See*—
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Wales, R. Langdon; and Crowley, H. W., to Automation, Inc. Method and apparatus for weighing material. 4,605,083, Cl. 177-122.000.

Walker, Charles F.: *See*—
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Walker, Leigh E.: *See*—
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Walter, Christoph: *See*—
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Walters, Paul W.; Raiche, H. Anthony; and Busch, Lloyd E., to Ashland Oil, Inc. Apparatus for cooling fluid solid particles in a regeneration system. 4,605,636, Cl. 502-39.000.

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Wang Laboratories, Inc.: *See*—
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Warburton, Frank W. Conductor for high voltage electricity. 4,605,819, Cl. 174-127.000.

Warden, Gerald D.: *See*—
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4,604,849, Cl. 53-266.00A.

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Warner-Lambert Company: *See*—
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Tseo, Gus G.; and Fitzwater, Dennis L., 4,605,396, Cl. 604-32.000.

Wason, Thomas D., to Cain Encoder Company. Angular position detector. 4,606,008, Cl. 364-560.000.

Watanabe, Akio; and Goto, Sumio, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Process for improving abrasion resistance of textile belts. 4,605,571, Cl. 427-387.000.

Watanabe, Hiroki: *See*—
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Watanabe, Kenjiro: *See*—
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Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, to Teijin Limited. 5-fluoro-2'-deoxyuridine derivatives and a process for the preparation thereof. 4,605,645, Cl. 514-51.000.

Watanabe, Koichiro: *See*—
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Watanabe, Shigeyoshi: *See*—
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Watanabe, Takeaki, to Nissan Motor Company, Limited. Structure of defroster nozzle for automotive vehicle. 4,604,946, Cl. 98-2.090.

Watanabe, Takeaki, to Nissan Motor Co., Ltd. Air guide arrangement in engine room. 4,604,974, Cl. 123-41.570.

Watanabe, Toshiyasu: *See*—
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Watkins, Dennis W., to Air Sensor Inc. Hot wire anemometer. 4,604,895, Cl. 73-204.000.
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Weber, Kathleen; and Benson, Joseph B., to University of Michigan, The Regents of the. Automobile seat belt tightener for use with child safety seats. 4,604,773, Cl. 24-71.200.
Weber, Lee A., to Babcock & Wilcox Company, The. Pneumatic converter having variable gain relay stack. 4,605,033, Cl. 137-84.000.
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Westfalia Separator AG: *See*—
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Westhoff, William L., to Gates Rubber Company, The. Toothed belt and sprocket. 4,605,389, Cl. 474-153.000.
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Westinghouse Electric Corp.: *See*—
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Weston, Robert E.; and Hunter, Robert R., III, to Complex, Inc. Transdermal infusion device. 4,605,399, Cl. 604-305.000.
White, Lahroy A., Jr. Loudspeaker system utilizing an equalizer circuit. 4,606,071, Cl. 381-99.000.
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Wilbur, Leonard P., Jr.; and Anthony, Wallace B., to RCA Corporation. System for uniformly dispensing a paste material to a seal edge. 4,604,967, Cl. 118-668.000.
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Winbow, Graham A.; and Chen, Sen-Tsuen, to Exxon Production Research Co. Acoustic dipole shear wave logging device. 4,606,014, Cl. 367-75.000.
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Wisdom, Lawrence W., to Frito-Lay, Inc. Method and apparatus for slicing produce. 4,604,925, Cl. 83-13.000.
Wise, Lawrence. Water filter. 4,605,499, Cl. 210-282.000.
Witheford, John M.; Pellon, Joseph J.; and Colman, William P., to American Cyanamid Company. Preparation of aqueous polyacrylamide solutions for enhanced oil recovery. 4,605,689, Cl. 523-313.000.
Wixon, Harold E., to Colgate-Palmolive Company. Fabric softening built detergent composition. 4,605,506, Cl. 252-8.750.
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Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,605,664, Cl. 514-425.000.

Won, Duksoo. Opening means having hold down means. 4,605,141, Cl. 220-269.000.

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Wrathall, Robert S., to Motorola. Safe operating area circuit and method for an output switching device. 4,605,891, Cl. 323-313.000.

Wright, Danny O.: *See*—
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Wright, Joyce. Woman's outer garment. 4,604,761, Cl. 2-227.000.

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Wurst, Walter K., to ITT Corporation. Digital conference circuit. 4,606,021, Cl. 370-62.000.

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Xomox Corporation: *See*—
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Yaacov, Yoav-Bar; and Minke, Ram, to Makteshim Chemical Works Ltd. Method for preparing flame retardant thermoplastic nylon resins and compositions therefor. 4,605,708, Cl. 525-423.000.

Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, to Nippon Zeon Co., Ltd. Process for producing S-adenosyl-L-homocysteine. 4,605,625, Cl. 435-280.000.

Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, to Hitachi, Ltd. Semiconductor-type pressure transducer. 4,604,899, Cl. 73-708.000.

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Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Machine and method for picture reproduction with steadily variable reproduction scale. 4,605,957, Cl. 358-78.000.

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Yamada, Shinji: *See*—
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Yamada, Takeshi, to Horiba, Ltd. Gas analyzer with compact cell structure. 4,605,855, Cl. 250-343.000.

Yamada, Toyohisa: *See*—
Ando, Masamoto; Takeuchi, Hiroaki; Yamada, Toyohisa; and Yamanaka, Toshihiko, 4,605,263, Cl. 303-116.000.

Yamaguchi, Akihiro: *See*—
Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.

Yamaguchi, Keizo: *See*—
Yamamoto, Tadashi; Ichiya, Mitsuo; and Yamaguchi, Keizo, 4,604,800, Cl. 30-41.000.

Yamaguchi, Ken: *See*—
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.

Yamaguchi, Kenichi, to Hitachi, Ltd. Method and apparatus for detecting position of object with ultrasonic wave. 4,606,015, Cl. 367-95.000.

Yamaguchi, Michiyuki: *See*—
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Yamaguchi, Yoshiharu; and Doi, Masashi, to Yoshida Kogyo K. K. Sliding clasp fastener. 4,604,774, Cl. 24-389.000.

Yamaguchi, Yuzoo: *See*—
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Yamamoto, Masaji: *See*—
Masuda, Yoshiaki; Fukuo, Hidetoshi; and Yamamoto, Masaji, 4,605,441, Cl. 106-21.000.

Yamamoto, Norihisa: *See*—
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.

Yamamoto, Shigeo: *See*—
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.

Yamamoto, Tadashi; Ichiya, Mitsuo; and Yamaguchi, Keizo, to Matsushita Electric Works, Ltd. Sealing construction for a casing. 4,604,800, Cl. 30-41.000.

Yamamoto, Yasushi: *See*—
Ohashi, Toshio; and Yamamoto, Yasushi, 4,604,873, Cl. 62-158.000.

Yamamoto, Yoichi; and Shimada, Mitsuhiro, to Sharp Kabushiki Kaisha. Thermal head with cutaway substrate. 4,605,936, Cl. 346-76.0PH.

Yamamoto, Yukio, to Yoshida Kogyo K. K. Apparatus for retaining a sash in open position in a projected window. 4,605,252, Cl. 292-338.000.

Yamamura, Yukio: *See*—
Moriwaki, Hiroshi; Yamamura, Yukio; and Fujikawa, Kazuhiko, 4,604,993, Cl. 128-24.200.

Yamanaka, Toshihiko: *See*—
Ando, Masamoto; Takeuchi, Hiroaki; Yamada, Toyohisa; and Yamanaka, Toshihiko, 4,605,263, Cl. 303-116.000.

Yamauchi, Koichi: *See*—
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Yamazaki, Masaya: *See*—
Miyazaki, Koichi; and Yamazaki, Masaya, 4,604,872, Cl. 62-156.000.

Yanagawa, Yukio: *See*—
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, 4,605,142, Cl. 220-359.000.

Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, to Nitto Chemical Industry Co., Ltd. Drilling fluids. 4,605,505, Cl. 252-8.514.

Yanagihashi, Kikuji: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,605,695, Cl. 524-424.000.

Yashin, Jury A.: *See*—
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.

Yazaki Corporation: *See*—
Nishijima, Tamotsu; and Fujino, Toshihiro, 4,604,882, Cl. 72-71.000.

Yedid, Harry: *See*—
Crabtree, Steven B.; Yedid, Harry; and Sherman, James B., 4,606,051, Cl. 375-86.000.

Yevich, Joseph P.; and Lobeck, Walter G., Jr., to Bristol-Myers Company. Antipsychotic 1-fluorophenylbutyl-4-(2-pyrimidinyl)piperazine derivatives. 4,605,655, Cl. 514-252.000.

Yiyanaka, Motoshi: *See*—
Toudo, Kenzi; Yiyanaka, Motoshi; and Hayata, Yoshiki, 4,605,863, Cl. 307-269.000.

Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, to Green Cross Corporation, The. Perfluoro-1-azatricyclic amine compounds useful as oxygen carriers in artificial blood and infusion fluids. 4,605,650, Cl. 514-183.000.

Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, to Green Cross Corporation, The. Perfluoro ether compound containing perfluorocycloalkyl moiety. 4,605,786, Cl. 568-669.000.

Yonehara, Takashi; and Hayashi, Kanji. Method and apparatus for forming an extremely thin film on the surface of an object. 4,605,574, Cl. 427-424.000.

Yonezawa Chemical Industry Co., Ltd.: *See*—
Yonezawa, Toyozo, 4,605,791, Cl. 568-755.000.

Yonezawa, Toyozo, to Yonezawa Chemical Industry Co., Ltd. Process for purification of technical grade pentachlorophenol. 4,605,791, Cl. 568-755.000.

Yorisue, Shozo: *See*—
Sawazaki, Masatoshi; and Yorisue, Shozo, 4,604,877, Cl. 66-224.000.

Yoshida, Haruhiko: *See*—
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, to Nippondenso Co., Ltd. Porous ceramic structure. 4,604,869, Cl. 60-311.000.

Yoshida Kogyo K. K.: *See*—
Kojima, Shinichi; and Ishikawa, Kiichiro, 4,604,783, Cl. 29-410.000.
Kusayama, Masahiro, 4,604,775, Cl. 24-389.000.
Yamaguchi, Yoshiharu; and Doi, Masashi, 4,604,774, Cl. 24-389.000.
Yamamoto, Yukio, 4,605,252, Cl. 292-338.000.

Yoshida Kogyo K.K.: *See*—
Kawakami, Koichi; and Sawada, Mitsuo, 4,604,782, Cl. 29-409.000.

Yoshida, Masashi: *See*—
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.

Yoshida, Takao: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.

Yoshimoto, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Redundancy-secured semiconductor memory. 4,606,013, Cl. 365-200.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, 4,605,940, Cl. 346-209.000.
Young, Peter J.; and Romocki, Julian M. E., to Amerigo Technology Limited. Well treating composition and method. 4,605,068, Cl. 166-307.000.
Yuasa Battery Company Limited: *See*—
Marui, Takao; and Uwani, Tetsuo, 4,604,794, Cl. 29-623.100.
Yuzurihara, Itsuo, to Kyosan Electric Co., Ltd. Input drive apparatus for power transistor. 4,605,865, Cl. 307-270.000.
Zacharias, Karl, to Mannesmann Aktiengesselschaft. Measuring the load on lifting equipment. 4,605,829, Cl. 200-52.00R.
Zagnoli, Giorgio; Conte, Ubaldo; and Colombo, Paolo, to Lisapharma Spa. Pharmaceutically active salt derivative of 3-hydroxy-5-(hydroxymethyl)-2-methylisonicotinaldehyde phosphate. 4,605,741, Cl. 546-24.000.
Zajicek, Ernst: *See*—
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,606,038, Cl. 373-24.000.
Zanegina, Galina A.: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.
Zazula, Teodosij: *See*—
Willis, Brian J.; and Zazula, Teodosij, 4,605,778, Cl. 568-433.000.
Zeavin, Mark. Clip system for immoveably mounting a magnetic head on a support. 4,605,978, Cl. 360-104.000.
Zelina, Francis J., Jr., to Lighting Systems, Inc. Recharging spot/flood lantern. 4,605,993, Cl. 362-183.000.
Zemke, Anne, legal representative: *See*—
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4,604,849, Cl. 53-266.00A.
Zemke, Edward H., deceased (by Zemke, Anne, legal representative); Guenther, Kenneth L.; and Warden, Gerald D., to Bell & Howell. Insertion machine drive. 4,604,849, Cl. 53-266.00A.
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, to Shinagawa Refractories Co., Ltd. Carbon-containing refractory. 4,605,635, Cl. 501-96.000.
Zettergren, Ted, to Hydrino AB. Pilot oil supply arrangement. 4,605,042, Cl. 137-596.120.
Ziarnik, Allen P.: *See*—
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.
Zielinski, Erich; and Meschke, Harry, to Rheinmetall GmbH. Emergency chambering device. 4,604,941, Cl. 89-47.000.
Ziesse, Norman G.: *See*—
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.
Zilog, Inc.: *See*—
Hartranft, Marc D.; and Garrett, Keith A., 4,605,980, Cl. 361-56.000.
Zimmerman, Melvin M., to Superior Walls of America, Ltd. Method of constructing a prefabricated concrete wall structure. 4,605,529, Cl. 264-263.000.
Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Reinforced recessed pourer in insulating jug. 4,605,134, Cl. 215-13.00A.
Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Pouring spout having an insert. 4,605,225, Cl. 222-566.000.
Zinnen, Hermann A., to UOP Inc. Process for separating monoterpenes. 4,605,783, Cl. 568-492.000.
Zollinger, Otto, to Otto Zollinger, Inc. Yarn tension control device. 4,605,182, Cl. 242-149.000.
Zumbrunnen, Eric: *See*—
Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, 4,604,808, Cl. 33-143.00M.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF AUGUST, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adams, John M. Variable dilution filter. Re. 32,221, Cl. 131-336.000.

Basu, Samir: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Drutchas, Gilbert H., to TRW Inc. Steering gear. Re. 32,222, Cl. 180-79.100.

Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, to Roneo Alcatel Limited. Electronic franking machines. Re. 32,226, Cl. 364-900.000.

Gillender, John B.: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Harvey Hubbell Incorporated: *See*—
Neuroth, David H., Re. 32,225, Cl. 174-103.000.

Kreeger, Elsmer W.; and Stahl, Edward L., to Pinckney Molded Plastics, Inc. Multilevel stacking container. Re. 32,223, Cl. 206-506.000.

Neuroth, David H., to Harvey Hubbell Incorporated. Oil well cable. Re. 32,225, Cl. 174-103.000.

Pinckney Molded Plastics, Inc.: *See*—
Kreeger, Elsmer W.; and Stahl, Edward L., Re. 32,223, Cl. 206-506.000.

Raedisch, Helmer: *See*—
Schafer, Wolfgang; and Raedisch, Helmer, Re. 32,224, Cl. 428-423.100.

Roneo Alcatel Limited: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Saint-Gobain Industries: *See*—
Schafer, Wolfgang; and Raedisch, Helmer, Re. 32,224, Cl. 428-423.100.

Schafer, Wolfgang; and Raedisch, Helmer, to Saint-Gobain Industries. Polyurethane coated safety glass. Re. 32,224, Cl. 428-423.100.

Shacklady, Michael: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Stahl, Edward L.: *See*—
Kreeger, Elsmer W.; and Stahl, Edward L., Re. 32,223, Cl. 206-506.000.

TRW Inc.: *See*—
Drutchas, Gilbert H., Re. 32,222, Cl. 180-79.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Andersson, Georg, B1 3,764,305, Cl. 75-130.00R.

Andersson, Georg, to Allmanna Svenska Elektriska Aktiebolaget. Method of storage and heat-retaining for treated nodular cast iron. B1 3,764,305, 8-12-86, Cl. 75-130.00R.

Armco Steel Corporation: *See*—
Evans, Ralph E.; and Blower, Howard E., B1 3,815,213, Cl. 29-446.000.

Astec Industries, Inc.: *See*—
Brock, J. Donald, B1 4,348,146, Cl. 414-332.000.

Avnet Inc.: *See*—
Rafal, Marc; Joines, William T.; and Burton, Larry W., B1 4,475,242, Cl. 455-3.000.

Blower, Howard E.: *See*—
Evans, Ralph E.; and Blower, Howard E., B1 3,815,213, Cl. 29-446.000.

Brock, J. Donald, to Astec Industries, Inc. Self-erecting surge bin. B1 4,348,146, 8-12-86, Cl. 414-332.000.

Burton, Larry W.: *See*—
Rafal, Marc; Joines, William T.; and Burton, Larry W., B1 4,475,242, Cl. 455-3.000.

Evans, Ralph E.; and Blower, Howard E., to Armco Steel Corporation. Method of making an improved slot drainage culvert. B1 3,815,213, 8-12-86, Cl. 29-446.000.

Joines, William T.: *See*—
Rafal, Marc; Joines, William T.; and Burton, Larry W., B1 4,475,242, Cl. 455-3.000.

Lowrance Electronics, Inc.: *See*—
Weber, Ronald G., B1 4,322,827, Cl. 367-99.000.

Meyer, Edward P.; and Wright, William L., to Picker Electronics, Inc. Sector scanning ultrasonic inspection apparatus. B1 4,014,207, 8-12-86, Cl. 73-621.000.

Picker Electronics, Inc.: *See*—
Meyer, Edward P.; and Wright, William L., B1 4,014,207, Cl. 73-621.000.

Rafal, Marc; Joines, William T.; and Burton, Larry W., to Avnet Inc. Microwave communications system. B1 4,475,242, 8-12-86, Cl. 455-3.000.

Shivers, Charles C. Method for circulating grain stored in a circular bin. B1 3,563,399, 8-12-86, Cl. 414-786.000.

Weber, Ronald G., to Lowrance Electronics, Inc. Range expander for sonar system. B1 4,322,827, 8-12-86, Cl. 367-99.000.

Wright, William L.: *See*—
Meyer, Edward P.; and Wright, William L., B1 4,014,207, Cl. 73-621.000.

LIST OF DESIGN PATENTEES

A. De Luze & Fils & Cie: *See*—
Heriard-Dubreuil, Marc, 285,051, Cl. D9-318.000.

Abbott Laboratories: *See*—
Huang, Tung-Ming, 285,118, Cl. D24-56.000.

Acriform Engineering, Inc.: *See*—
Burgess, John D.; and Taylor, Thomas E., 285,110, Cl. D23-55.000.

Aldridge, Rufus W., Jr., to Spencer Wright Industries, Inc. Milling machine. 285,084, 8-12-86, Cl. D15-131.000.

Allen, David O., to Allen Tool Company, Inc. Combined closure and opener for container. 285,056, 8-12-86, Cl. D9-454.000.

Allen Tool Company, Inc.: *See*—
Allen, David O., 285,056, Cl. D9-454.000.

Alonzo, Patrick R. Beverage tumbler or the like. 285,032, 8-12-86, Cl. D7-6.000.

Amdahl Corporation: *See*—
Katai, Dwaine S., 285,075, Cl. D14-102.000.

Anchor Hocking Corporation: *See*—
Gobleck, Peter A., Jr., 285,033, Cl. D7-6.000.
Gobleck, Peter A., Jr., 285,034, Cl. D7-8.000.

Andico Manufacturing Ltd.: *See—*
Dean, Howard; Kocsis, Andre; and Yee, William H., 285,047, Cl. D8-382.000.
AT&T Bell Laboratories: *See—*
Danielson, David C.; Genaro, Donald M.; and McGarvey, John N., 285,073, Cl. D14-63.000.
Proetta, William J.; Sylvester, Gordon E.; and Tilley, Alvin R., 285,076, Cl. D14-113.000.
Aurora S.p.A.: *See—*
Verona, Franco, 285,096, Cl. D19-48.000.
Bates, Bobby L., to Bates - Johnson & Co., Inc. Combined jumper cable control box and lamp. 285,063, 8-12-86, Cl. D13-5.000.
Bates - Johnson & Co., Inc.: *See—*
Bates, Bobby L., 285,063, Cl. D13-5.000.
Baum, Barry L., to Baum, Barry Lee. Eyeglass temple. 285,092, 8-12-86, Cl. D16-127.000.
Baum, Barry Lee: *See—*
Baum, Barry L., 285,092, Cl. D16-127.000.
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Luthe, Claus; and Boyer, Boyke, 285,060, Cl. D12-190.000.
Beaumont, Thomas G., to Motorola, Inc. Handset telephone receptacle or similar article. 285,070, 8-12-86, Cl. D14-61.000.
Beck, Klaus, to Telefonaktiebolaget LM Ericsson. Screw anchor. 285,048, 8-12-86, Cl. D8-385.000.
Bianchi, Walter G.; and Imai, Hironobu. Bottle. 285,052, 8-12-86, Cl. D9-371.000.
Black & Decker Inc.: *See—*
Somers, Robert I., 285,041, Cl. D8-21.000.
Bluestein, Bernard B., to John Zink Company. Pressing iron. 285,133, 8-12-86, Cl. D32-70.000.
Bobrovniczky, Bert, to Noma Inc. Multiple outlet strip. 285,065, 8-12-86, Cl. D13-30.000.
Bounds, William E. Condiment mill. 285,037, 8-12-86, Cl. D7-53.000.
Boyer, Boyke: *See—*
Luthe, Claus; and Boyer, Boyke, 285,060, Cl. D12-190.000.
Braner Enterprises Inc.: *See—*
Richards, Lawrence J., 285,136, Cl. D34-28.000.
Burgess, John D.; and Taylor, Thomas E., to Acriform Engineering, Inc. Corner bath tub. 285,110, 8-12-86, Cl. D23-55.000.
Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 285,121, Cl. D26-26.000.
Schwartz, Frederic W., 285,123, Cl. D26-118.000.
Camino Laboratories: *See—*
Sato, Stephens N.; and Manno, Joseph J., 285,112, Cl. D24-17.000.
Cannie Products Limited: *See—*
Heubel, Walter, 285,055, Cl. D9-434.000.
Carter, Raymond M.: *See—*
Smith, Raymond G.; and Carter, Raymond M., 285,132, Cl. D32-18.000.
Cassai, Gino H.; and Cassai, Henry J. Adjustable cosmetic applicator. 285,125, 8-12-86, Cl. D28-7.000.
Cassai, Henry J.: *See—*
Cassai, Gino H.; and Cassai, Henry J., 285,125, Cl. D28-7.000.
Chandler, Jean E. Eye shade. 285,021, 8-12-86, Cl. D2-241.000.
Chatam International Incorporated: *See—*
Cooper, Norton J., 285,029, Cl. D6-461.000.
Chrysler Corporation: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,061, Cl. D12-196.000.
Clark, Robert O., to Plastic Clad Corporation. Corner unit for a kitchen countertop. 285,031, 8-12-86, Cl. D6-511.000.
Collister, Kenneth D.; and Johnson, Steven C., to Miles Laboratories, Inc. Automated urinalysis instrument. 285,114, 8-12-86, Cl. D24-17.000.
Cooper, Norton J., to Chatam International Incorporated. Display stand with rotatable shelves. 285,029, 8-12-86, Cl. D6-461.000.
Cournoyer, Bernard T.: *See—*
Ermanski, Albert G.; Cournoyer, Bernard T.; and Wright, David M., 285,093, Cl. D19-90.000.
Cowan, Keith B.: *See—*
Winegard, John R.; and Cowan, Keith B., 285,074, Cl. D14-90.000.
Crain, John E.: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,061, Cl. D12-196.000.
Danielson, David C.; Genaro, Donald M.; and McGarvey, John N., to AT&T Bell Laboratories. Telephone handset. 285,073, 8-12-86, Cl. D14-63.000.
Davis, G. William. Cut-away holster. 285,104, 8-12-86, Cl. D3-101.000.
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., to Chrysler Corporation. Automobile door panel exterior surface. 285,061, 8-12-86, Cl. D12-196.000.
Dean, Howard; Kocsis, Andre; and Yee, William H., to Andico Manufacturing Ltd. Headboard bracket. 285,047, 8-12-86, Cl. D8-382.000.
Deere & Company: *See—*
Wood, Mark W., 285,081, Cl. D15-33.000.
Delbuck, Pascal. Loudspeaker. 285,067, 8-12-86, Cl. D14-30.000.
Eastman Kodak Company: *See—*
Hansen, David E., 285,087, Cl. D16-6.000.
Eindhoven Druk B.V.: *See—*
Oskamp, Johan H. E., 285,026, Cl. D3-35.000.
Ermanski, Albert G.; Cournoyer, Bernard T.; and Wright, David M., to Wright Line Inc. Filing container. 285,098, 8-12-86, Cl. D19-90.000.
F. C. Brown Rentals, Inc.: *See—*
Moody, Albert L., 285,077, Cl. D15-1.000.
Fellows, Boyd W. Housing for an electronic game. 285,099, 8-12-86, Cl. D21-13.000.
Finkle, Jeffrey H. Two-hand mitten. 285,024, 8-12-86, Cl. D2-366.000.
Fischer, Robert R.; and Urschel, Joe R., to Urschel Laboratories, Inc. Impeller for comminuting equipment. 285,085, 8-12-86, Cl. D15-139.000.
Floordress Reinigungsgeraete GmbH: *See—*
Schunter, Roland, 285,134, Cl. D34-21.000.
Forsheda AB: *See—*
Jornhagen, Lennart, 285,109, Cl. D23-47.000.
Fujita, Tsutomu, to Toyota Jidosha Kabushiki Kaisha. Rear combination lamp for an automobile. 285,122, 8-12-86, Cl. D26-35.000.
Genaro, Donald M.: *See—*
Danielson, David C.; Genaro, Donald M.; and McGarvey, John N., 285,073, Cl. D14-63.000.
General Foods Corporation: *See—*
Stinson, Karen, 285,040, Cl. D7-360.000.
Gilchrist, Jonathan L.; and Griffith, John A. Floatable tray. 285,036, 8-12-86, Cl. D7-37.000.
Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Tumbler or similar article. 285,033, 8-12-86, Cl. D7-6.000.
Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Tumbler or similar article. 285,034, 8-12-86, Cl. D7-8.000.
Gordon, Michael, to Koret Inc. Luggage carrier. 285,135, 8-12-86, Cl. D34-26.000.
Griffith, John A.: *See—*
Gilchrist, Jonathan L.; and Griffith, John A., 285,036, Cl. D7-37.000.
Haas, Ulrich J., to Optyl Eyewear Fashion International Corporation. Eyeglass frame. 285,089, 8-12-86, Cl. D16-102.000.
Haas, Ulrich J., to Optyl Eyewear Fashion International Corporation. Eyeglass frame. 285,090, 8-12-86, Cl. D16-102.000.
Hahn, Jerome S. Cutlery storage block. 285,038, 8-12-86, Cl. D7-74.000.
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CLASSIFICATION OF PATENTS

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341	4,604,858
	4,604,859

CLASS 57

9	4,604,860
	4,604,861
264	4,604,862
352	4,604,863

CLASS 60

286	4,604,868
290	4,604,864
293	4,604,865
311	4,604,869
535	4,604,866
551	4,604,870
653	4,604,867

CLASS 62

1	4,604,762
22	4,605,427
130	4,604,871
156	4,604,872
158	4,604,873
298	4,604,874
354	4,604,875

CLASS 63

32	4,604,876

CLASS 65

2	4,605,428
105	4,605,429

CLASS 66

224	4,604,877

CLASS 70

139	4,604,878
224	4,604,879

CLASS 71

23	4,605,430
87	4,605,431
92	4,605,432
93	4,605,433
94	4,605,434

CLASS 72

9	4,604,880
53	4,604,881
71	4,604,882
280	4,604,883
299	4,604,884
306	4,604,885
354	4,604,886
368	4,604,887
379	4,604,888
391	4,604,889
453.16	4,604,890

CLASS 73

4 R	4,604,891
37.5	4,604,892
49.2	4,604,893
64.1	4,604,894
204	4,604,895
583	4,604,896
621	B1 4,014,207
626	4,604,897
701	4,604,898
708	4,604,899
716	4,604,900
731	4,604,901
861.04	4,604,902
861.06	4,604,904
861.12	4,604,905
861.74	4,604,906
862.04	4,604,903

CLASS 74

7 E	4,604,907
15.88	4,604,908
63	4,604,909
96	4,604,910
424.8 R	4,604,911
484 R	4,604,912
540	4,604,913
688	4,604,914
790	4,604,915
805	4,604,916

CLASS 75

0.5 R	4,605,435
10.65	4,605,436
43	4,605,437
67 A	4,605,438
118 R	4,605,439
130 R	B1 3,764,305
238	4,605,440

CLASS 81

53.2	4,604,917
57.17	4,604,922
57.38	4,604,918
58.2	4,604,919
64	4,604,920
429	4,604,921

CLASS 82

1 C	4,604,923
27	4,604,924

CLASS 83

13	4,604,925
18	4,604,926
55	4,604,927
151	4,604,928
524	4,604,929
527	4,604,930
665	4,604,931
830	4,604,932
851	4,604,933
880	4,604,934

CLASS 84

1.01	4,604,935
313	4,604,936
435	4,604,937

CLASS 89

1.8	4,604,938
1.816	4,604,939
	4,604,940
47	4,604,941
185	4,604,942

CLASS 91

59	4,604,943

CLASS 92

98 D	4,604,944
176	4,604,945

CLASS 98

2.09	4,604,946

CLASS 99

353	4,604,947
470	4,604,948

CLASS 100

194	4,604,949

CLASS 101

110	4,604,950
153	4,604,951
451	4,604,952

CLASS 102

272	4,604,953
434	4,604,954

CLASS 106

21	4,605,441
22	4,605,442
104	4,605,443
138	4,605,444
236	4,605,445
287.12	4,605,446

CLASS 108

147	4,604,955
	4,604,956

CLASS 110

238	4,604,957

CLASS 112

443	4,604,958

CLASS 114

39	4,604,959
222	4,604,960
230	4,604,961
266	4,604,962

CLASS 116

300	4,604,963

CLASS 118

50	4,604,964
219	4,604,965
406	4,604,966
668	4,604,967

CLASS 119

1	4,604,968
14.36	4,604,969
51 R	4,604,970
86	4,604,971

CLASS 122

510	4,604,972

CLASS 123

41.21	4,604,973
41.57	4,604,974
145 A	4,604,975
361	4,604,976
365	4,604,977
374	4,604,978
449	4,604,979
450	4,604,980
451	4,604,981
477	4,604,982
571	4,604,983
589	4,604,984

CLASS 124

56	4,604,985

CLASS 126

25 B	4,604,986
204	4,604,987
360 A	4,604,988
369	4,604,989
418	4,604,990
437	4,604,991

CLASS 128

6	4,604,992
24.2	4,604,993
69	4,604,995
79	4,604,994
87 R	4,604,996
92 A	4,604,997
132 D	4,604,998
200.21	4,604,999
201.25	4,605,000
305	4,605,001
321	4,605,002
328	4,605,003
334 R	4,605,004
335	4,605,005
401	4,605,006
419 PT	4,605,007
660	4,605,008
	4,605,009
686	4,605,010
752	4,605,011
804	4,605,012

CLASS 131

80	4,605,013
94	4,605,014
	4,605,015
297	4,605,016
336	Re.32,221

CLASS 132

1 R	4,605,017
7	4,605,018
9	4,605,019
11 R	4,605,020
33 R	4,605,021
82 R	4,605,022
85	4,605,023
88.5	4,605,024
92 R	4,605,025
112	4,605,026

CLASS 134

108	4,605,027
167 C	4,605,028

CLASS 135

104	4,605,029
117	4,605,030

CLASS 136

244	4,605,813

CLASS 137

15	4,605,031
44	4,605,032
84	4,605,033
88	4,605,034
240	4,605,035
327	4,605,036
390	4,605,037
399	4,605,038
460	4,605,039
489	4,605,040
527	4,605,041
596.12	4,605,042

CLASS 138

149	4,605,043

CLASS 139

304	4,605,044
448	4,605,045

CLASS 140

112	4,605,046

CLASS 141

83	4,605,047

CLASS 144

136 B	4,605,048
144 R	4,605,049

CLASS 148

1.5	4,605,447
11.5 A	4,605,448
12 B	4,605,449
188	4,605,450
191	4,605,451
404	4,605,452

CLASS 149

24	4,605,453

CLASS 150

52 G	4,605,050

CLASS 156

73.1	4,605,454
78	4,605,455
157	4,605,456
160	4,605,457
164	4,605,458
215	4,605,459
229	4,605,460
233	4,605,461
245	4,605,462
247	4,605,463
253	4,605,464
273.3	4,605,465
293	4,605,466
497	4,605,467
608	4,605,468
610	4,605,469
643	4,605,470
645	4,605,471

CLASS 157

13	4,605,051

CLASS 162

277	4,605,472

CLASS 164

16	4,605,052
54	4,605,053
147.1	4,605,054
479	4,605,055
490	4,605,056
519	4,605,057

CLASS 165

80.2	4,605,058
163	4,605,059
166	4,605,060

CLASS 166

63	4,605,061
127	4,605,062
216	4,605,063
237	4,605,064
250	4,605,065
273	4,605,066
285	4,605,067
307	4,605,068
310	4,605,069
380	4,605,070

CLASS 168

12	4,605,071

CLASS 172

236	4,605,072

CLASS 173

51	4,605,073

CLASS 174

2	4,605,814
41	4,605,815
65 R	4,605,816
67	4,605,817
103	Re.32,225
107	4,605,818
127	4,605,819

CLASS 175

4.52	4,605,074
58	4,605,075
61	4,605,076
85	4,605,077
162	4,605,078
410	4,605,079

CLASS 177

4	4,605,080
25	4,605,081

4,605,082
122 4,605,083

CLASS 178

22.09 4,605,820

CLASS 179

6.13 4,605,821
16 AA 4,605,822
18 BC 4,605,823
18 HB 4,605,824
99 R 4,605,825
170.2 4,605,826
175.3 F 4,605,827

CLASS 180

70.1 4,605,084
79.1 Re.32,222
143 4,605,085
202 4,605,086
248 4,605,087

CLASS 181

30 4,605,088
114 4,605,089
210 4,605,090
224 4,605,091
280 4,605,092
295 4,605,093

CLASS 182

20 4,605,094
48 4,605,095
51 4,605,096
92 4,605,097
4,605,098
155 4,605,099
213 4,605,100

CLASS 184

6.11 4,605,101

CLASS 186

37 4,605,102

CLASS 188

71.5 4,605,103
72.4 4,605,104
251 M 4,605,105
374 4,605,106

CLASS 192

0.02 R 4,605,107
4,605,108
0.033 4,605,112
4 C 4,605,109
5 4,605,110
16 4,605,111
98 4,605,113
106.2 4,605,114

CLASS 198

341 4,605,115
364 4,605,116
493 4,605,117
509 4,605,118
514 4,605,119
781 4,605,120
803.01 4,605,121
834 4,605,122

CLASS 200

5 A 4,605,828
52 R 4,605,829
73 4,605,830
83 D 4,605,832
83 R 4,605,831

CLASS 204

1 T 4,605,473
44 4,605,474
130 4,605,475
181.6 4,605,476
181.7 4,605,478
182.6 4,605,477
192 D 4,605,479
211 4,605,480
243 M 4,605,481
258 4,605,482
280 4,605,483
290 R 4,605,484
302 4,605,485

CLASS 206

0.5 4,605,123
223 4,605,124
312 4,605,125
386 4,605,126
506 Re.32,223
525 4,605,127
611 4,605,128
623 4,605,129

CLASS 208

78 4,605,488
87 4,605,489
143 4,605,490
161 4,605,491
310 Z 4,605,492
341 4,605,493
408 4,605,487
412 4,605,486

CLASS 209

166 4,605,494
211 4,605,495
394 4,605,496

CLASS 210

111 4,605,497
222 4,605,498
282 4,605,499
321.1 4,605,500
519 4,605,501
611 4,605,502
651 4,605,503
656 4,605,504

CLASS 211

59.2 4,605,130
90 4,605,131

CLASS 212

185 4,605,132

CLASS 213

155 4,605,133

CLASS 215

13 A 4,605,134
220 4,605,135
232 4,605,136
254 4,605,137
4,605,138

CLASS 219

56.22 4,605,833
69 W 4,605,834
85 BM 4,605,835
130.01 4,605,836
206 4,605,837
319 4,605,838
349 4,605,839
401 4,605,840
449 4,605,841

CLASS 220

3.4 4,605,139
233 4,605,140
269 4,605,141
359 4,605,142

CLASS 222

566 4,605,225

CLASS 224

214 4,605,143
265 4,605,144

CLASS 226

74 4,605,145
97 4,605,146
156 4,605,147
174 4,605,148

CLASS 227

7 4,605,149
18 4,605,150

CLASS 228

2 4,605,151
6.2 4,605,152
56.3 4,605,153
102 4,605,154
119 4,605,155
127 4,605,156
132 4,605,157

CLASS 229

15 4,605,158
116 4,605,159

CLASS 235

1 D 4,605,842
33 4,605,843
380 4,605,844
382 4,605,845
468 4,605,846
471 4,605,847

CLASS 236

13 4,605,160
15 BC 4,605,161
49 4,605,162

CLASS 237

2 A 4,605,163
4,605,164

CLASS 239

6 4,605,165
96 4,605,166
102 4,605,167
112 4,605,168
265.29 4,605,169
444 4,605,170
453 4,605,171

CLASS 241

33 4,605,172
36 4,605,173
52 4,605,174
56 4,605,175
240 4,605,176

CLASS 242

35.5 A 4,605,177
55 4,605,178
72 B 4,605,179
107.4 A 4,605,180
149 4,605,181
4,605,182

CLASS 244

46 4,605,183
58 4,605,184
60 4,605,185
110 B 4,605,186
216 4,605,187

CLASS 248

157 4,605,188
162.1 4,605,189
316.7 4,605,190
318 4,605,191
394 4,605,192
460 4,605,193
559 4,605,194

CLASS 250

205 4,605,848
216 4,605,849
221 4,605,850
223 B 4,605,851
231 R 4,605,852
231 SE 4,605,853
266 4,605,854
343 4,605,855
363 S 4,605,856
372 4,605,857
374 4,605,858
4,605,859
397 4,605,860
484.1 4,605,861
578 4,605,862

CLASS 251

1.2 4,605,195
30.01 4,605,197
58 4,605,198
84 4,605,196
171 4,605,199
258 4,605,200
305 4,605,201
315 4,605,202

CLASS 252

8.514 4,605,505
8.75 4,605,506
45 4,605,507
95 4,605,508
131 4,605,509
299.66 4,605,510
301.21 4,605,511

CLASS 254

93 HP 4,605,203

CLASS 256

19 4,605,204

CLASS 260

112.005 4,605,512
502.5 F 4,605,522

CLASS 261

1 4,605,523

CLASS 264

2.5 4,605,524
40.5 4,605,525
41 4,605,526
137 4,605,527
216 4,605,528
263 4,605,529

CLASS 266

160 4,605,205
283 4,605,206

CLASS 267

57.1 R 4,605,207

CLASS 269

32 4,605,208

CLASS 270

40 4,605,209
41 4,605,210
53 4,605,211
54 4,605,212
55 4,605,213

CLASS 271

3.1 4,605,214
9 4,605,215
18.3 4,605,216
124 4,605,217
238 4,605,218

CLASS 272

75 4,605,219
96 4,605,220
117 4,605,221
122 4,605,222
130 4,605,223
146 4,605,224

CLASS 273

26 C 4,605,226
54 B 4,605,227
77 R 4,605,228
86 R 4,605,229
129 AP 4,605,230
157 A 4,605,231
348.1 4,605,232

CLASS 277

80 4,605,233
81 R 4,605,234
87 4,605,235
235 B 4,605,236

CLASS 280

47.24 4,605,237
154.5 R 4,605,238
158 R 4,605,239
236 4,605,240
281 R 4,605,241
294 4,605,242
642 4,605,243
707 4,605,244

CLASS 281

34 4,605,245

CLASS 282

29 A 4,605,246

CLASS 285

9.2 4,605,247
52 4,605,248
98 4,605,249

CLASS 292

171 4,605,250
288 4,605,251
338 4,605,252

CLASS 294

8.6 4,605,253
57 4,605,254
67.33 4,605,255
99.2 4,605,256

CLASS 296

26 4,605,257
164 4,605,258
190 4,605,259
201 4,605,260

CLASS 297

16 4,605,261

CLASS 303

84 A 4,605,262
116 4,605,263

CLASS 305

47 4,605,264

CLASS 307

269 4,605,863
270 4,605,864
4,605,865
296 R 4,605,866
351 4,605,867
4,605,868
425 4,605,869
443 4,605,870
455 4,605,871
465 4,605,872

CLASS 310

154 4,605,873
268 4,605,874
323 4,605,875
358 4,605,876

CLASS 312

219 4,605,266
297 4,605,267

CLASS 313

272 4,605,877
406 4,605,878
407 4,605,879
414 4,605,880
638 4,605,881

CLASS 315

158 4,605,882

CLASS 318

312 4,605,883
314 4,605,884
317 4,605,885
565 4,605,886
594 4,605,887
786 4,605,888

CLASS 322

61 4,605,889

CLASS 323

209 4,605,890
313 4,605,891
315 4,605,892

CLASS 324

58.5 B 4,605,893
73 R 4,605,894
133 4,605,895
158 F 4,605,896
207 4,605,897
232 4,605,898
258 4,605,899
439 4,605,900

CLASS 328

140 4,605,901
158 4,605,902

CLASS 329

50 4,605,903
4,605,904

CLASS 330

9 4,605,905
149 4,605,906
257 4,605,907

CLASS 331

8 4,605,908
96 4,605,909

CLASS 332

9 R 4,605,910

CLASS 333

144 4,605,911
164 4,605,912
166 4,605,913
237 4,605,914
238 4,605,915
245 4,605,916

CLASS 335

128 4,605,917
261 4,605,918

CLASS 338

2 4,605,919

CLASS 339

16 C 4,605,268
17 LC 4,605,269
40 4,605,270
45 M 4,605,271
60 M 4,605,272
75 P 4,605,273
89 R 4,605,274
119 R 4,605,275
176 MF 4,605,276
262 R 4,605,277
275 B 4,605,278
276 R 4,605,279

CLASS 340

347 DD 4,605,921
347 NT 4,605,920
552 4,605,922
604 4,605,923
683 4,605,924
825.19 4,605,927
825.3 4,605,926
825.94 4,605,928
870.29 4,605,925

CLASS 343

6.8 R 4,605,929
413 4,605,930
700 MS 4,605,931
4,605,932
4,605,933
895 4,605,934
914 4,605,935

CLASS 346

76 PH 4,605,936
4,605,937
4,605,938
140 R 4,605,939
209 4,605,940

CLASS 350

96.20 4,605,280
96.21 4,605,281
127 4,605,283
167 4,605,282
334 4,605,284
357 4,605,285
429 4,605,286
513 4,605,287
552 4,605,288
606 4,605,289
619 4,605,290
623 4,605,291
641 4,605,292

CLASS 351

153 4,605,293

CLASS 353

28 4,605,294

CLASS 354

154 4,605,295
223 4,605,296
303 4,605,297

CLASS 355

3 R 4,605,299
3 TR 4,605,298
29 4,605,300
69 4,605,301

CLASS 356

5 4,605,302
73 4,605,303
138 4,605,304
246 4,605,305
334 4,605,306
350 4,605,307
373 4,605,308

CLASS 357

2 4,605,941
17 4,605,942
4,605,943
4,605,944
22 4,605,945
23.1 4,605,946
23.15 4,605,947
34 4,605,948
71 4,605,949

CLASS 358

11 4,605,950
4,605,951
13 4,605,952
24 4,605,953
27 4,605,954
29 4,605,955
44 4,605,956
78 4,605,957
84 4,605,958
93 4,605,959
106 4,605,960
119 4,605,961
140 4,605,962
141 4,605,963
147 4,605,964
148 4,605,965
160 4,605,966
183 4,605,967
188 4,605,968
213 4,605,969
265 4,605,970
285 4,605,971
302 4,605,972
335 4,605,973

CLASS 360

62 4,605,974
4,605,975
70 4,605,976
103 4,605,977
104 4,605,978
105 4,605,979

CLASS 361

56 4,605,980
91 4,605,981
94 4,605,982
154 4,605,983
220 4,605,984
283 4,605,985
386 4,605,986
403 4,605,987
429 4,605,988
433 4,605,989

CLASS 362

32 4,605,990
65 4,605,991
147 4,605,992
183 4,605,993
202 4,605,994
287 4,605,995
352 4,605,996

CLASS 363

16 4,605,997
19 4,605,998
4,605,999
145 4,606,000

CLASS 364

167 4,606,001
200 4,606,002

4,606,003
414 4,606,004
431.01 4,606,005
472 4,606,006
474 4,606,007
560 4,606,008
724 4,606,009
900 Re.32,226

CLASS 365

149 4,606,010
4,606,011
189 4,606,012
200 4,606,013

CLASS 366

76 4,605,309
142 4,605,310

CLASS 367

75 4,606,014
95 4,606,015
99 B1 4,322,827

CLASS 368

77 4,605,311
282 4,605,312

CLASS 369

54 4,606,016
275 4,606,017
279 4,606,018

CLASS 370

3 4,606,020
13 4,606,019
62 4,606,021
85 4,606,022
94 4,606,023

CLASS 371

16 4,606,024
20 4,606,025
39 4,606,026
43 4,606,027
49 4,606,028
69 4,606,029

CLASS 372

5 4,606,030
28 4,606,031
38 4,606,032
45 4,606,033
57 4,606,034
87 4,606,035
95 4,606,036

CLASS 373

6 4,606,037
24 4,606,038
108 4,606,055

CLASS 374

121 4,605,313
127 4,605,314
144 4,605,315

CLASS 375

1 4,606,039
4,606,040
4,606,041
2.1 4,606,042
12 4,606,043
13 4,606,044
4,606,045
17 4,606,046
38 4,606,047
39 4,606,048
45 4,606,049
75 4,606,050
86 4,606,051
87 4,606,052
4,606,053
102 4,606,054
110 4,606,056

CLASS 376

237 4,605,530
252 4,605,531

CLASS 377

28 4,606,057
39 4,606,058
47 4,606,059
60 4,606,060

CLASS 378

10 4,606,061
13 4,606,062
41 4,606,063
99 4,606,064

CLASS 381

4,606,071

CLASS 382

18 4,606,065
41 4,606,066
42 4,606,067
56 4,606,068
4,606,069

CLASS 383

4 4,606,070

CLASS 384

20 4,605,265
99 4,605,316
101 4,605,317
482 4,605,318
484 4,605,319
494 4,605,320
512 4,605,321
575 4,605,322

CLASS 400

124 4,605,323
144.2 4,605,324
201 4,605,326
207 4,605,325
208 4,605,327
662 4,605,328

CLASS 401

68 4,605,330
258 4,605,331

CLASS 403

23 4,605,332
27 4,605,333
291 4,605,334
348 4,605,335

CLASS 404

6 4,605,336
35 4,605,337

CLASS 405

124 4,605,338
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	241	285,021		360	285,040		190	285,060		27	285,080		108	285,100		35	285,122
	283	285,022	D8—	21	285,041		196	285,061		33	285,081			285,101		65	285,120
	320	285,023		91	285,042		342	285,062		82	285,082		149	285,102		118	285,123
	366	285,024		323	285,043	D13—	5	285,063		127	285,083		208	285,103		138	285,124
	422	285,025		354	285,044		17	285,064		131	285,084	D23—	19	285,105	D28—	7	285,125
D3—	35	285,026		366	285,045		30	285,065		139	285,085		28	285,106		49	285,126
	101	285,104		382	285,046		35	285,066	D16—	5	285,086		31	285,107		64	285,127
D6—	361	285,027			285,047	D14—	30	285,067		6	285,087			285,108		85	285,128
	375	285,028		385	285,048		53	285,068		102	285,088		47	285,109	D30—	9	285,129
	461	285,029		396	285,049			285,069			285,089		55	285,110		40	285,130
	491	285,030		402	285,050		61	285,070			285,090		165	285,111			285,131
	511	285,031	D9—	318	285,051		62	285,071			285,091	D24—	17	285,112	D32—	18	285,132
D7—	6	285,032		371	285,052			285,072		127	285,092			285,113		70	285,133
		285,033		384	285,053		63	285,073	D17—	14	285,093			285,114	D34—	21	285,134
	8	285,034		389	285,054		90	285,074	D18—	2	285,094		29	285,115		26	285,135
	9	285,035		434	285,055		102	285,075		3	285,095		36	285,116		28	285,136
	37	285,036		454	285,056		113	285,076	D19—	48	285,096			285,117			285,137
	53	285,037	D10—	73	285,057	D15—	1	285,077		72	285,097		56	285,118		31	285,138
	74	285,038	D12—	107	285,058		15	285,078		90	285,098	D25—	35	285,119	D99—	35	285,139

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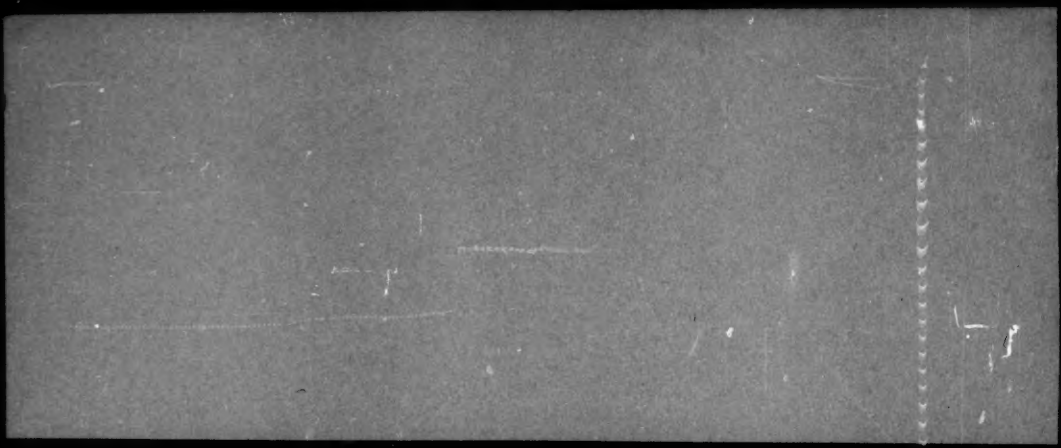

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